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# CANADIAN JOURNAL OF Fabrics

THE JOURNAL OF THE  
Textile Trades of Canada.

Vol. XIV.

TORONTO AND MONTREAL, JULY, 1897

No. 7.

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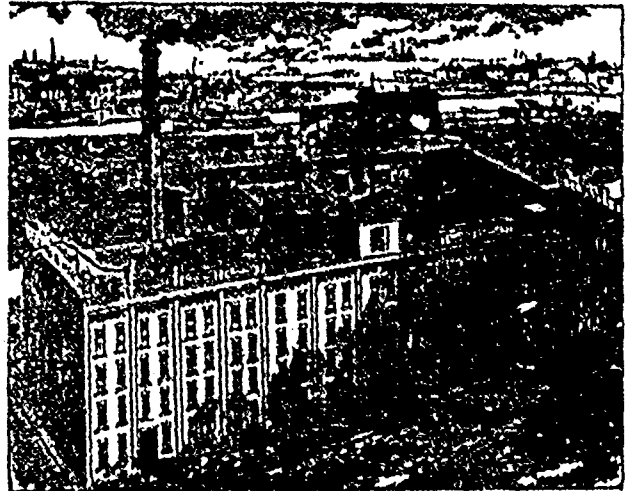
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# CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIV.

TORONTO AND MONTREAL, JULY, 1897.

No. 7

## Canadian Journal of Fabrics

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

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### THE CANADIAN TEXTILE DIRECTORY

A Handbook of all the Cotton, Woolen and other Textile manufactures of Canada, with lists of manufacturers' agents and the wholesale and retail dry goods and kindred trades of the Dominion, to which is appended a vast amount of valuable statistics relating to these trades. Fourth edition now in hand.

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## Editorial.

The new crop is on the market, the first bale being sold early in the month.

**Cotton.** What movement there is at present, however, is strictly confined to hand-to-mouth buying; as it will be some weeks yet before the main body of the crop will be so advanced as to preclude damage. In the north east part of the cotton belt the crop is only one week late, instead of three, as was some time ago anticipated. Conditions in general are considered very favorable, and a large crop is looked for. Middling cotton is now 7½¢. In 1896, at this time, it was 7¼¢, in 1895 and 1894, 7¼¢.

### Wool Exports.

Canadian wool growers have received good prices for this season's clip, and have had it taken off their hands with much more than the usual expedition. During one week last month nearly one million pounds were exported from Toronto, and two Hamilton firms exported half a million pounds in almost as short a time. Account must also be taken of the numerous shipments made from local points, which would not pass through Toronto or Hamilton, though bought by dealers there.

### N W T. Wools.

The new clip is now on the market in the North West, as the shearing has been finished some little time on most ranches. The prospects of the sheep rancher are decidedly looking up, as the yield of lambs is quite beyond the average, and the clip is reported extra good. A well known Ontario manufacturer who recently returned from a tour of the Territories, says the crossing of Montana ewes with Shropshire and other choice breeds has produced a quality of wool superior to much now put on the market in Ontario, and he looks forward to the wools from that region taking a commanding position in the trade at an early date. The bulk of the season's clip has already been shipped to the United States. One Winnipeg dealer has 100,000 lbs. of wool stored at Pembina, just across the boundary, waiting for the duty to be imposed.

### London Wool Sales.

The fourth series of the colonial wool sales opened July 6th with a large attendance of buyers. Competition was keen. Greasy merinos suitable for America sold at 5 per cent. higher than closing of last series, while other descriptions of merinos ruled unchanged. A fair collection of Cape of Good Hope and Natal wool was bought by Germany, and the home trade without alteration in price. Cross-breeds were in keen demand at unchanged rates. The support given the market by American buying has been a feature of the present sales which was not altogether expected, as it was thought that holders on their side had on hand all they cared to carry. The American demand for the better grades has been well maintained throughout in spite of this. New Zealand wools have been largely in demand.

### U. S. Wool Schedule.

The tariff bill as it passed the Senate contains several features which differentiate from the House bill. The most important is that washed fleeces of the second class are dutiable at double the unwashed duty. Although the rates on unwashed fleeces of the first and second classes

have been reduced one cent below the House bill, the grower has been given a partial equivalent for this reduction in the doubling of the duty upon Canadian and British combing fleece washed, which heretofore came in at the unwashed duty. As many foreign fleece washed wools are, it is claimed, almost as clean as scoured, shrinking only 12 to 18 per cent. (as in the case of Australian spout washed or Irish brook washed), they are practically scoured wool, but formerly only paid the unwashed duty. It is believed that these wools should no longer be admitted at the same duty as unwashed. This change will be a decided gain to the United States wool grower, and will go a long way toward compensating for the loss to him of one cent on the unwashed duty as provided in the House bill. As the difference between Lincoln crossbred wools of the first and second classes is so slight as to make them almost undistinguishable, the duties on unwashed wools of those classes should be unified by adopting the House bill rates of 11 cents on unwashed wools of the first class and the Senate rates of 11 cents on unwashed wools of the second class, so that there will be but one rate of 11 cents on all unwashed wools of the first or second class. The necessity for this change will be at once apparent by examining the practical workings of the tariff, says a recent circular issued by Justice, Bateman & Co., which is as follows: "Canadian unwashed under the Senate bill will be dutiable as second-class wool at 11c. per pound, but by re-baling it in packages similar to Australian, it would be passed without question as first-class wool at only 10 cents. No expert, without some clue as to where the wool was grown, would be able to decide as to whether it should be classified as second-class wool at 11 cents or as first-class wool at 10 cents. No such irregularities would be possible if the duties on unwashed first and second-class wools were the same." It is doubtful if, with the proposed improvements, it will not be found to be better than the law of 1867 would have been if re-enacted now, considering the altered conditions of the wool business at the present time. While it is true that only one per cent. of the American clip is coarse enough for the manufacture of carpets, the balance of it being too fine, as it would make carpets too thin and light, nevertheless 14 to 15 million pounds of the finer grades of imported third-class wools annually enter the manufacture of textiles other than carpets, and take the place of just that much common or coarse American wool. Imported wools, therefore, to this extent do compete with the domestic staple.

"Ltd." The amendments made to the Joint Stock Companies Act at the last session of the Ontario Legislature contains a clause prohibiting the use of the abbreviation "Ltd." instead of the word "Limited," after the name of a joint stock company, and provides heavy penalties for the violation of this clause. The general public remained in ignorance of this change in the Act, and no steps were taken to enforce it until a private citizen took action against a well-known company for a very large sum. Clause 22 of the Act is as follows:— "Every company shall have painted or affixed its name, with the unabbreviated word 'limited' as the last word

thereof, on the outside of every office or place in which the business of the company is carried on, in a conspicuous position, in letters easily legible; and shall have its name with the said unabbreviated word in legible characters in all notices, advertisements, and other official publications of the company, and in all bills of exchange, promissory notes, indorsements, cheques and orders for money or goods purporting to be signed by or on behalf of such company, and in all bills of parcels, invoices and receipts of the company." A company using the abbreviation incurs a penalty of \$20 a day, as does also every manager and director who "knowingly and wilfully authorizes or permits" such a fault. An officer or director of a company, who permits the use of the abbreviation, or any seal bearing the abbreviation, incurs a penalty of \$200, and is personally liable to the holder of any note, cheque, etc., for its amount unless duly paid by the company. Since public attention has been directed to this change in the law, there has been a rush on the part of the incorporated companies to strike out the objectionable word from their signs, letter-heads, etc. This regulation, of course, is not intended to apply to any companies other than those incorporated under the Ontario Act Respecting the Incorporation and Regulation of Joint Stock Companies.

#### THE WORLD'S PRODUCTION OF RAW MATERIAL.

In a recent issue of the *Economiste Francais*, M. Paul Leroy-Beaulieu states that for a long time it had been a sort of axiom with economists that if manufactured goods have a tendency to persistently fall in price as mechanical and chemical improvements advance, all vegetable and animal products, especially the latter, must grow dearer through the incapacity of agriculture to keep pace with industry in its progress. This contention is, however, denied at the present day as a result, in fact, of the experience of the last quarter of a century. On the one hand, the world not being yet completely peopled, enormous tracts of country like the two Americas, Oceania, and, more lately, Africa, with an extent of territory out of proportion to their sparse population, can daily pour out into the old countries increasing quantities of raw material; on the other hand, the ancient civilizations, such as India, Japan, and in a lesser degree, China, are having recourse, not only to the capital, but also to the technical methods of Europe, and are becoming more and more productive.

An important document (The Annual Report of the President of the Permanent Commission on Customs Valuation), which has just been published, gives some instructive information on the upward tendency in the production of raw materials for industries and manufactures.

The report, which on account of the minute details it affords, cannot be applied to quite recent facts—deals with the years 1894 and 1895.

The first material treated of is wool. It is well known how much the quantities of this article of merchandise have increased within the last thirty or forty years. One estimate has placed the production in Europe, the United States, La Plata, the Cape, and Australia at 806,000,000 lbs. in 1850, 1,371,000,000 lbs. in 1870, and

1,577,000,000 lbs. in 1880. In 1895, according to the Report of the Valuation Commission, "the quantity of wool at the disposal of the world's industries reached 1,059,000,000 kilogs"—this would mean about 1,334,000,000 lbs., or nearly three times as much as in 1850, 70 per cent. more than in 1870, and 45 per cent. more than in 1880.

This enormous development in the production of a raw material, useful, no doubt, but the use of which cannot be indefinitely increased, must cause a considerable fall in prices, and even with this decline in the wholesale value, which is never followed by a proportionate and equally rapid decline in the retail value, the placing of the article has been very difficult.

In 1896 there was a perceptible rise in the value of wool on account chiefly of the ravages occasioned by the drought in Australia; but it would be imprudent to reckon on the continuance of the rise, which was due to exceptional causes. As a matter of fact, the human race, which is not yet entirely provided with warm clothing, blankets, and carpets, need not complain of the abundance and low price of such a useful raw material. What is required is that the retail cost of the manufactured article should be in proportion to the wholesale cost of the raw material, so that the consumer might profit by the fall in prices, and consumption itself be increased.

Cotton is also an article the production of which goes on increasing from year to year. It is estimated that the amount of cotton produced in the United States, India, Egypt and other countries was 636,000,000 lbs. in 1830, 1,192,000,000 lbs. in 1840, 2,391,000,000 lbs. in 1860, and 4,039,000,000 lbs. in 1880. According to the Report of the President of the Valuation Commission, the world's cotton crop in 1895 was 18,200,000 bales of 400 lbs., or about 7,280,000,000 lbs. This eleven times more than in 1830, six times more than in 1840, three times as much as in 1860, and 80 per cent. more than in 1880. The report states that "the consumption cannot keep pace with the production," but if the retail price fell there are many consumers who would become large purchasers. The report adds that spinners have never had such an opportunity of stocking at a low price, but that the year was less advantageous to the weavers than to the spinners.

The 18,200,000 bales referred to come from the producing countries in the following proportions: 10,500,000 bales (these of 450 lbs.) from the United States, 2,600,000 bales (of 470 lbs.) from India, and 634,000 bales (of 717 lbs., or nearly two ordinary bales) from Egypt. In the United States alone the area of land cultivated with cotton amounts to upwards of 20,000,000 acres.

The third chief raw material for textile manufactures is silk. The report states that the year 1895 was marked by a great activity in the silk trade. The quantity of raw silk placed on the market by the crop of 1895 reached 35,200,000 lbs., a much higher figure than 1894 or 1893, which were 30,250,000 lbs. and 33,000,000 lbs. respectively, thus showing an evident increase of production. Europe and Asia Minor furnished 35 to 36 per cent. of the total; the Far East from 64 to 65 per cent. China remains the chief exporting nation for this product, 13,500,000 lbs. having been sent from that country in 1895. But the pro-

gress of Japan is rapid; she produces already as much silk as all the European countries together, and is continually increasing her mulberry plantations. Although the production increased in 1895, there was also a very evident rise in prices.

For some time silk manufacturers have been making great progress in the United States, and the establishments of that country, according to the report, are in the first rank as regards the amount of silk worked up, viz., 9,372,000 lbs., as against 8,008,000 lbs. in France, 5,610,000 lbs. in Germany, 3,652,000 lbs. in Switzerland, and 2,200,000 lbs. in Russia.

With regard to flax, hemp, and other materials, the report does not state the amount of production at the disposal of the industries of the world, owing, doubtless, to the difficulty of obtaining information on this point. The production of flax in France has not ceased to decline in spite of the very high bounties granted; and the area of land cultivated with flax in that country does not exceed 89,000 acres.

The production of oleaginous seeds, which have such an important place in a host of modern industries, as also in manures, is one of those which may be most easily developed throughout the world: British India, Senegal, and the whole African coast, with earth-nuts, sesame and poppy-seeds; Argentina and Russia with flax seed; Philippines, Dutch Indies, and all Oceania with cocoanuts and copra; Russia and Roumania with colza seed; Egypt with cotton seed; it would seem as if an immense river of oil with all these different tributaries were being directed more and more on civilized nations. Every step in progress made by colonization in America, Africa and Asia will but increase it, and the price in consequence must fall. These oleaginous products, while competing with home agriculture, aid it also to a certain extent by means of those fertilizing oil cakes which are used in Europe as food for cattle.

Another raw material, the production of which may increase in notable proportion, is timber. France imports common woods annually to the value of from 130 to 150 millions of francs, especially from Austria, Sweden, Russia, and the United States, with certain special kinds, such as cork, from Algeria and Italy; but the greater part of the newer countries of South America, and parts of Africa and Oceania, will be able to furnish quantities of various kinds of woods, when they are opened up by railways, or when there are increased facilities for river transportation.

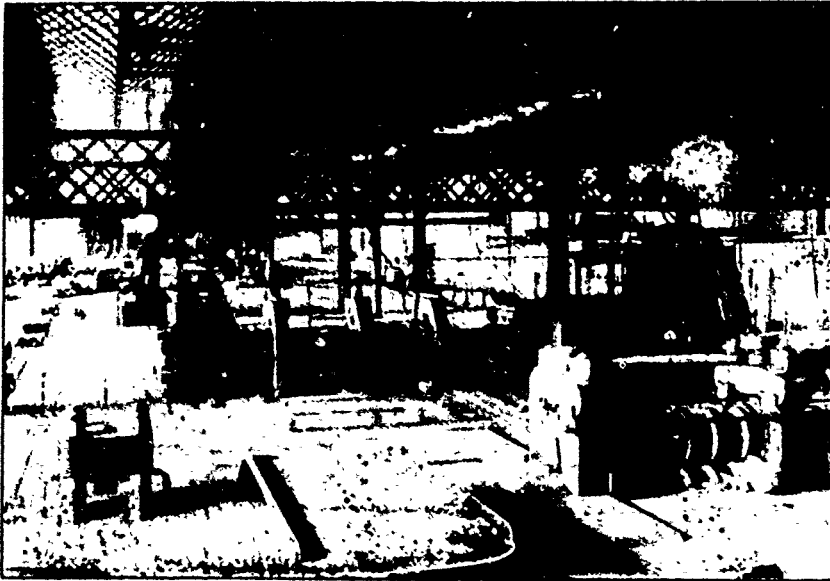
It would appear, therefore, that the civilized world is by no means coming to an end of its resources as regards raw materials for industries, or even for food, and there can be no fear of nature being exhausted in satisfying its requirements.

The Beaver Rubber Clothing Company, Montreal, have recently removed to 8 St. Lawrence street. E. L. Rosenthal, the manager of the company, may be called the pioneer manufacturer of rubber clothing in Montreal, if not in the whole of Canada, having had charge of the clothing branch of the Canadian Rubber Company's works for several years. Mr Rosenthal fell heir to the good work of this branch when the Canadian Rubber Company retired from the field. The Beaver Rubber Company do a very successful trade, employing no travellers, and selling to the wholesale trade exclusively.

## BRITISH RAILWAY ENTERPRISE.

*Correspondence of THE CANADIAN JOURNAL OF FABRICS.*

My letter under this head last month made some general comparisons between the railway systems of Great Britain and the United States, and showed that in the



RAIL MILL, CREWE WORKS

great essentials of safety of passengers, speed and economical administration, as well as profits to investors, the railways of Great Britain take the lead. This, my concluding letter, will give some more concrete facts concerning the magnitude of the operations of a great British railway. In doing this I have singled out the London and North-Western Railway, not only because it is the largest railway corporation in the world, but because it is one of the best administered, and withal most popular with Canadian and American visitors to England. I gave incidentally some figures showing the splendid equipment of this road, and the admirable training of its officers and men, as shown in their ability to handle such enormous crowds of passengers and quantities of freight as they are called upon at times to transport. Figures are not always dry, and certainly the figures with which one is required to deal in describing the work of a great corporation like this, are eloquent in themselves. The capital of the London and North-Western Railway is a little over \$600,000,000, the magnitude of which will be realized when I mention that the total capital invested in all the industries of Canada of whatever kind is, according to the census of 1891, \$354,020,750. The report of the company for the half year ending June, 1896, shows that the following passengers were carried: First class, 981,785; second class, 1,461,405; third class, 33,416,013; season tickets, 41,815. Or at the rate of nearly 72,000,000 per year, and so

far as I know not a single passenger's life was lost. This total more than equals the population of the United States, Canada and Newfoundland combined. In one week last year (that before the Bank holiday) the passenger traffic receipts were \$1,560,000. And yet the total mileage of the London and North Western, including leased lines, is only 1,912. The return of rolling stock at the meeting referred to showed 2,335 engines, 1,778 tenders, 4,369 passenger cars or "coaches" of various classes, and 65,850 cars for various classes of freight. This is exclusive of "duplicate working stock," among which are 445 engines. The company also own 4,078 horses—enough to make a strong cavalry force for an army, while its human employes, numbering 60,000, would certainly make a respectable army. The bill for coal and coke for the locomotive department for the past year was \$1,975,000, and for "oil, tallow and other stores," for the same branch, \$131,740. It requires \$12,500 a day to keep the road in proper repair, the approach roads, bridges, signals and like items costing \$700,000, and \$500,000 a year goes in painting and

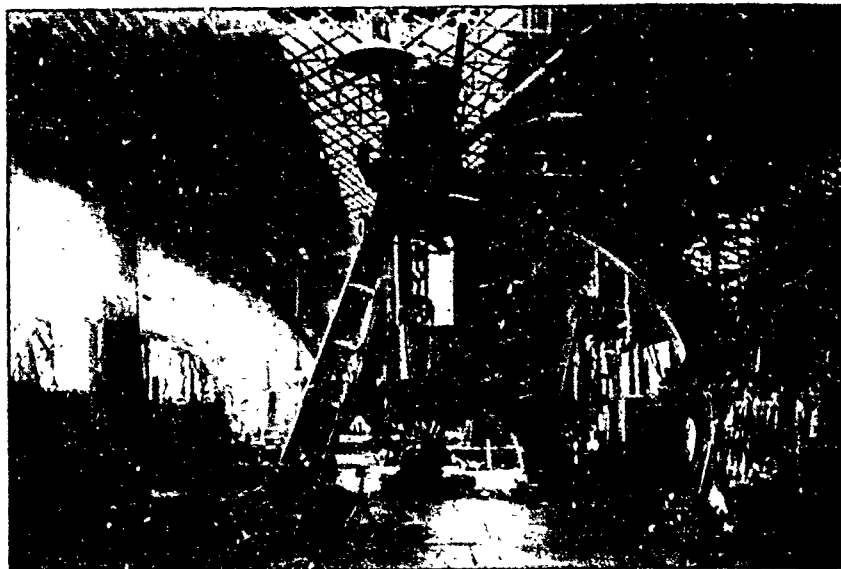
repairing, besides \$150,000 in rebuilding. Over \$360,000 a year is spent for new ballasting alone. Every foot of the line is inspected every day, and every signal cabin along the whole system receives inspection each fortnight. In the signal department there are eleven inspectors with 500 foremen, "chargemen," and artisans, and the rodding they deal with would extend from Land's End to John O'Groats, and the wires would more than stretch across the Atlantic from Liverpool to New York. There are



ERECTING SHOP, CREWE WORKS.

18,000 signals and 1,500 signal cabins, there being nine complete cabins turned out each week at the works at Crewe, to replace worn out ones, some of them having

twenty-four arms. To keep the rolling stock of the London and North-Western in repair costs about \$1,500,000. A third class passenger car costs in England about \$3,000



EIGHT-TON STEAM HAMMER, CREWE WORKS

and a first class composite one about \$4,000, and each vehicle gets sixteen coats of paint before it is finished. So much of the work of car building is done by machinery that the item of labor only costs \$100 per car. The car works are at Wolverton, and employ 3,500 men; the goods trucks, or open freight cars, are built at Earles, town, near Liverpool, and employ 2,000 hands, and the cost of maintaining the rolling stock—exclusive of engines—is \$2,100,000 a year.

The locomotive shops of the London and North-Western are at Crewe, and to the mechanical mind this is the centre of attraction of the system. It is marvellous to think of a town of this size being solely the creation of a railway company, and fulfilling the needs of only one department of it at that. On the 4th July, 1837 (the year the Queen came to the throne), the first train passed through Crewe, then a hamlet of 148 souls, now it is what Canadians would call a "city" of over 30,000, the whole population depending on or working in the shops of this railway. In 1843 the shops occupied less than three acres of ground, and employed 161 hands; now they cover over 120 acres and employ over 7,000. The town has a Mechanics' Institute, built and maintained by the company, and connected with it is a Science and Art School, whose students have won more Whitworth scholarships than any other place in England. It has a volunteer engineer corps, 600 strong, composed entirely of men in the works. The shops have their own fire brigade, and similar organizations, all very efficiently maintained. The parliamentary division is now

named after the town, which contains more than half the electorate.<sup>1</sup>

The first locomotive superintendent at Crewe was F. Trevithick, son of the great Trevithick, who, in 1805, brought out his wonderful "steam coach" and exhibited it on the very site now occupied by Euston station, the London and North-Western's London headquarters. In Trevithick's time the company had only 75 engines in stock.

At the Crewe shops, which now employ over 7,000 men, the company makes its own steel, has seven furnaces for steel of the Siemens-Martin process. The London and North-Western is the only English company that rolls its own rails, and a view of one of the rail mills is shown in one of the illustrations. The plant has a capacity of 45,000 tons of rail per year, and actually produces about 30,000 tons. The mill is driven by a 700 h.p. Corliss engine. An ingot of steel 3 feet long and 10½ inches square is taken out of the furnace and fed to the jaws of the swiftly revolving rollers of the mill. The ingot in passing to and fro in these grooves becomes longer and thinner with each squeeze; and finally, when it is formed into rail shape in the last pair of rollers, it is carried on smaller rollers to a circular saw, where the ends are cut off as easily as a scantling of wood is sawn off in a lumber mill, and we behold a finished rail 30 feet long and weighing 90 lbs. to the yard, the whole process of making the rail occupying only a minute. "Within the works," writes W. J. Gordon in an article on this town in *Pearson's Magazine*, "there are five miles and more of the pigmy track of 18 inch



BOILER SHOP, CREWE WORKS.

gauge which covers the floor of its shops like a spider's

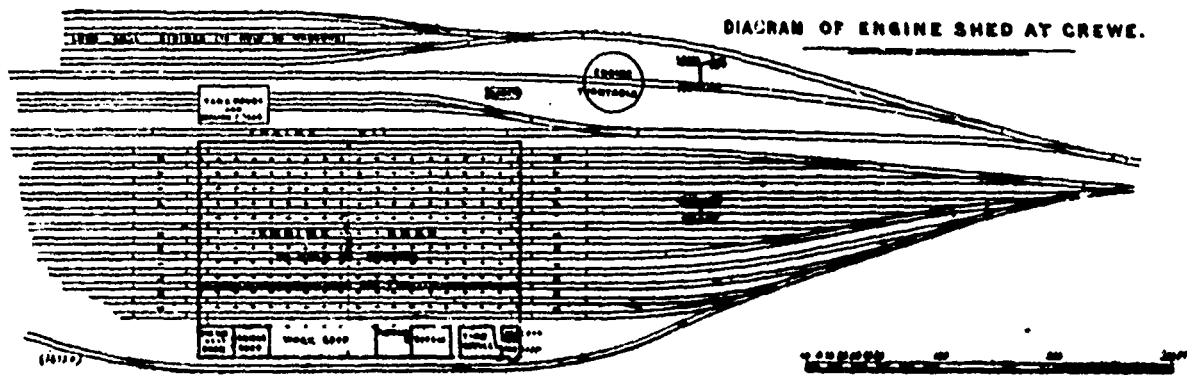
<sup>1</sup>For a fuller description of Crewe and its shops see article in *English Illustrated Magazine*, Feb., 1892, by C. J. B. Cooke.



web, on which run the miniature engines that once replaced the horses on the Shropshire Union Canal. Anything in the metal way used in railway practice you can get at Crewe from start to finish. You can see the steel made in the converters with all their roaring pyrotechny, and you can follow it from point to point, until it moves off by itself on the rails (made from the same converter), and flies north or south on its trial trip at 50, 60, 70, aye, 80 miles an hour." To build an engine in the ordinary way takes four weeks, but one engine was built here in the space of 25½ hours. The process of erecting an English engine is as follows: The different parts, such as boilers, frame plates, cylinders, axles, etc., being previously made in their respective shops, are brought here to the erecting shops, where first the frame plates are fixed by temporary cross-bars into the place they will occupy when the engine is complete. The cylinders and foot plate are then fixed in position, and when the skeleton is complete the boiler is lifted on by a crane. Then the cylinders are fitted in, and the wheels (which are usually of cast steel, and to which the axles have already been fitted) are then run under and the frame lowered down

engines arriving at Crewe with goods trains from either the north or south. These will pass into the shed at one end as they come off work, and after cleaning, will come out at the other end for the return journey. The length is 272 feet 7 inches, whilst the breadth is 184 feet 1 inch. All the ironwork is made to template and to standard patterns, so that any part will fit any similar shed, many of smaller dimensions having been erected at different points of the company's lines. The arrangement of tracks is shown in the diagram, which is reproduced from *Engineering*, of London.

To finish with a few more general statistics. The wages bill of the traffic department of the London and North-Western is \$8,455,000 a year; over \$1,000,000 a year is spent in fuel and light for the waiting rooms and cars; the uniforms for the men cost \$150,000 a year, and the printing and stationery amounts to over \$300,000, the actual weight of tickets sold being about 70 tons a year. The passenger trains run over twenty-one million miles a year, and the goods trains (freight) nearly as many, making a total of forty-one million miles. The receipts from passengers and freight make an annual total of ove



in them. The next work is the connecting of the rods and all the intricacies of the valve motion, and then all the internal and external fittings are completed. Before she is taken to the paint shop and polished up, she is sent out on her trial trip. As mentioned before, over 2,000 engines pass through these shops each year for overhauling and repair, and all the engines of the line consume about 3,500 tons of coal per day.

In the wheel shop some very fine machine tools are to be seen. Some of the lathes are capable of turning a wheel nine feet in diameter. One machine called "roughing lathe," has seven tools all employed at once in taking a rough cut off the crank axle, tearing the steel away in huge bites and making the axle ready for the finishing tool. A "nibbling machine," with 160 cutting tools, eats its way into the solid forging of a crank and cuts out the "throw" or inner bend of the crank. The boiler shops, a view of which is here given, employ several hundred hands, and the noise of riveting is like the roar of a tropical hail storm.

A new engine shed has just been completed, after a design by F. Webb, the able superintendent, to hold 60 standard tender engines. It is a "through and through" shed, and will be used principally for the "turnback"

\$32,500,000, and the total weight of passengers and freight thus carried is estimated at 38,000,000 tons.

But, as Mr. Gordon says in the article previously quoted, "there is a North-Western afloat as well as a North-Western ashore; the company is not only a railroad owner, but a canal owner and a steamboat owner. It pays over \$57,500 a year in light and harbor dues; its steamboat repairs cost over \$75,000 a year; its marine coal bill is over \$90,000 a year, and the manning of its fleet costs \$215,000 a year. Altogether it spends a trifle under five hundred thousand a year on its steamers. And its canals at Lancaster and Huddersfield cost over \$35,000 a year. During the same period it paid the Government \$75,000 as passenger duty, and its rates and taxes reached the enormous total of over \$750,000. Its telegraphing costs \$285,000 a year. To its superannuation fund, insurance, provident and pension societies and schools it gives \$225,000 a year. Curiously enough, it has among its directors one that is hereditary, as the *Great-Western* has one in Sir Watkin Wynn. This is the Duke of Sutherland, whose father is still known in railway circles as "the real live duke," from an incident which occurred on a line contrasting very decidedly with the North-Western, being that in Sutherlandshire, in the Dunrobin and Helms-

dale country, which his Grace practically paid for out of his own pocket. One day he was driving the express on this line as the train passed two navvies. 'There, Bill,' said one of them, 'that's what I call a real live dook; he's a-driving his own engine on his own line, and burning his own blessed coals!' He would be a rich man of whom that could be said on the North-Western."

#### WEAVING AS A FINE ART. \*

Before going into the details of cloth construction from an artistic standpoint, let me say now that in weaving any class of goods, either in the plain, twill or fancy, great care must be taken to have the warp beam wound true upon the slasher; that the gudgeons are central with the barrel of the beam so that they will unwind perfectly true. The whip roll and breast beam must be square with the warp beam and rigid. The reed also must be true with all these and held in a rigid lay that also must present a parallel line to the whip roll and warp beam. In a loom like the above the warp and weft threads will cross each other at perfectly right angles and present true lateral lines in the goods. This forms the basis upon which all cloths should be built from the mechanical side, and, if carefully and consistently followed, will save a heap of trouble in the goods used for special converting, the wider the more necessary. This is a point that should not be overlooked, and one that will give fine finished goods a much better appearance than if dealt with carelessly. How often do we see our heavy goods woven so that the edges for from four to six inches are in a full cut of fifty yards considerably longer than the centre if they could be measured. Light cloths or those made from fine yarns are the most sensitive in this direction and frequently give so much trouble to the converter that we lose the best effects in the finished product in the endeavor to dry and stretch evenly goods that have not been properly put together in the loom. In weaving the two extremes of either light or heavy cloths care should be taken to see that the divisions of the warp come regularly and evenly into play, so that one part of the warp yarn does not operate the letting off motion more than the other. This is the cause of a great deal of bagginess in the centre of wide, light cloths, and selvage stretching in the heavier makes.

The elasticity of good warp yarn will allow a great deal of error in the shape of harness cams. The starting and strapping of the same and the brown cloths will show little of the defects until they are being finished; then comes the trouble, and quite frequently we see a fine piece of goods that should present an artistic appearance very much injured in this direction. I might say in passing, here is a point where the automatic letting-off motion is superior to that of friction. Here, likewise, the fine art of weaving can show itself in selecting a good harness that is evenly knitted and in strapping it upon the harness cams with straps of even thickness, so that even shedding of

harnesses will result, and that both edges of the cloth or yarn will have equal strain while it is being made.

Properly seasoned wood for harness shafts and of sufficient depth to prevent spring where picks are beaten into place, will prevent bagginess in the centre of the cloth, just as a thick harness strap will cause a slack selvage by raising the shed a trifle higher on one side than the other, thus straining the yarn a little each pick, until in the course of weaving one hundred yards or more you have stretched one side quite a number of inches more than the other. The defect may not show itself until the cloth is finished, and can be ignored in brown goods, but no—it will come up the first time it is washed, and in the finished product can never be made right, but has to be covered up and endured. You may say here, this is a great deal of trouble to take with a piece of plain goods, and it will not make it wear or be worth any more; but I say that it will make it worth more, if persisted in, just as it will be better value to the consumer if put together so that it will wear evenly. If the better appearance does not make it command a higher price, it will make it sell quicker, and that is much to be desired. Let me digress here, and say that our loom builders have not given us a very mechanical oscillating motion for our harnesses. We batter and destroy them on account of room, and the flimsy way that they are strapped to the rollers; very often a slack strap, caused by stretching, ruins a set of harnesses.

The Empire loom builders, of Stockport, N.Y., are the only parties, as far as I know, who have made any attempt to give us a smooth, steady, and so, to a certain extent, protected oscillating motion. While it is not quite perfect in its arrangement of the lower roll, yet withal it is, I feel sure, the right principle, requiring nice adjustment of the harnesses, and compelling them to be hung so that the sheds will get the same movement on both edges of the cloth on the same shed, and a steady, even motion to both. The size of the wire in reeds, and the depth between boke or ribs, will make or mar the artistic appearance of the best woven cloths that are to be used for any purpose, in a brown state more particularly, and will have a proportionate influence when they are to be finished. Reeds made from wire as fine as No. 18 to No. 20 for fine yarns in high sleys should not be more than  $2\frac{1}{2}$  to  $2\frac{3}{4}$  inches between the ribs. The shorter sweep of looms made expressly for fine weaving will allow a smaller shuttle and smaller sheds, and hence a shallower reed. The action of the shuttle in rubbing against the reed will cause the threads to oscillate and zig-zag, so that the cloth will never get back in finish its proper appearance, and in the brown state will be far from artistic. We require in all reeds wire to be stiff enough when held in a good boke not to spring as the shuttle rubs against it in passing from one box to another. We always require the reeds to be as strong and fine as will resist the beat or force of making the fabric, and that we may get all the room for the yarn possible. The elastic reed caused by extra depth was a failure in more ways than one, and will not produce an artistic piece of cloth, however you may arrange the loom.

Reeds for general work should never be made more

\* Paper read by Alfred Hawkesworth, Montreal, before the New England Cotton Manufacturers' Association, April, 1897.

than three inches between the ribs unless for long-sweep looms, and then the size of the shed should determine the depth. Reeds for warp yarns numbering from No. 12s to No. 32s for goods from  $2\frac{1}{2}$  to 4 yards per pound, should be made from wire of the following sizes:

Sley	No.	American gauge.
48 to 52	14	" "
52 "	14 $\frac{1}{2}$	" "
56 "	15	" "
60 "	15	" "
64 "	15 $\frac{1}{2}$	" "
72 "	15 $\frac{1}{2}$	" "
76 "	16	" "
80 "	16 $\frac{1}{2}$	" "
84 "	17	" "

The print-cloth reed should be but  $2\frac{1}{2}$  inches between the ribs, and wire not coarser than No. 15 to 15 $\frac{1}{2}$ . The reed draft for ordinary plain goods is generally two threads in one dent. When yarns are fine and sleys are open they should be drawn with only one in each dent. This will give a much more artistic piece of cloth and cause no more breakage unless yarns are quite coarse. This idea should be carried as far as possible on low-sleyed goods where appearance is desired in brown goods. The thickness of the wire in reeds where fine yarns are to be woven, and where the wire is too coarse for the sley, will cause "twoiness" in the warp and disparage the value of the goods by their appearance, if something is not done to prevent it. We therefore hear a great deal about the cover of cloth, or we should say, about the regularity with which the threads are laid in both warp and weft. The art of the weaver comes in here, and he can do a great deal to remedy this evil and to give his goods a smooth and glossy feel and look by the choice of wire in his reeds, the perfection of his harnesses, and the setting of his cams, whip roll and breast beam. Still, to aid him he must have a properly-prepared warp, sized neither too hard nor too soft for the weave expected from it, and weft of the twist suitable to the size of the yarns to be used. Brown goods for the salt bag and grain trade should be built upon the following lines:

For Sleys.	Warp	Weft
40 × 48	No. 13	No. 13
42 × 52	No. 13	No. 13
44 × 52	No. 30	No. 30
48 × 52	No. 30	No. 30
52 × 52	No. 20	No. 16
52 × 60	No. 20	No. 16

You will note that the picks of weft are much higher in these goods than the warp, particularly in the lower sleys. This comes from the use to which these cloths are put, that is, the making of bags, where the strain comes more heavily upon the weft than upon the warp.

The twist of both warp and weft in these goods should be about the same, if anything the weft should be the stronger, whether in bleach or brown. No cover is required in this class of goods, save that of using as fine wire in the reeds as possible, and where practical to draw in the reed one thread only in each dent. Goods for the rubber and oil cloth trade that are plain should be made as follows:

Sleys.	Yarns.	Yarns.	Yarns.
48 × 48	No. 28 × 20 weft.	No. 28 × 24 weft.	No. 28 × 20 weft.
48 × 52	" 42 × 48 "	" 48 × 52 "	" 52 × 56 "
52 × 56			

The looms should be arranged to weave long cuts or rolls. The same twist should be given to these yarns that is used for general trade goods, particularly in the warp of No. × 5, and the weft should be twisted slightly harder than in goods made for the "counter trade," whether for brown or bleached goods, of No. × 3.50. Care should be taken to keep out reed marks or twoiness, but too much cover should not be sought after. Selvages should be made by not doubling too much, and care in setting of the harnesses should be exercised, so that in shedding, as the cop or bobbin on which the weft is wound nears the end and therefore causes a slightly tighter crossing, it will not be broken and cause loose places by the too early closing or changing of the shed. Thick or in any way uneven selvages must be avoided in this class of goods.

The sand or cloth roller must be kept true in size, and perfectly straight. It is absolutely necessary that true goods are given to meet this trade, just as it is that the length of the rolls be made to meet the size of the dry-house. Goods for general use, and more particularly selected by manufacturers of white wear, and not exactly the shirt trade, should be made as follows:

For Sleys.	Warp	Weft
52 × 52	No. 28	No. 32
52 × 56	No. 28	No. 32
56 × 60	No. 28	No. 32
60 × 64	No. 32	No. 37
64 × 68	No. 32	No. 37
68 × 72	No. 32	No. 40
72 × 76	No. 32	No. 40
76 × 80	No. 32	No. 40
80 × 84	No. 32	No. 40

You will note here that the picks of weft are given always as four more than the warp. This rule can be varied and will add somewhat to the appearance, but not in an artistic sense. If real good effects are to be obtained this only can be varied eight threads per inch, and in some instances, particularly in the lower sleys, it will disparage rather than improve their looks. The weft yarns in the higher sleys can be made eight to ten numbers finer than the warp, and about the same number of threads per inch increased above what are used in the warp. If we are after nice cloths for this trade that will take a fine muslin finish and yet not be a lawn by any means, we must make our yarns finer and increase our counts. This may be more expensive, but he whose purse is not limited, and buys from quality only, will not object.

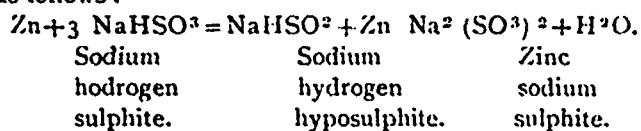
(To be continued.)

### WOOL BLEACHING.\*

*Hydrosulphite of Soda Bleach.*—This substance has been practically employed as a bleaching agent for several years, the process being conducted as follows: (1) Into a 100-gallon cask place 70 to 80 gallons of bisulphite of soda solution at 60° Tw., and then add granulated or rod zinc until the cask is nearly full. Cover tightly, and allow the reaction to proceed for

\* From Prof. W. M. Gardner's *Wool Dyeing*.

about an hour, or until the liquid no longer smells of sulphurous acid, taking care that the temperature does not rise beyond 90° to 100° F. The liquid is then syphoned off into another vessel and allowed to stand for several hours, when it deposits zinc sodium sulphite. Immediately the liquid is syphoned off, the first cask should be filled up with fresh bisulphite, a small quantity of zinc being added to take the place of that dissolved during the operation. If not required at the time for another operation, the zinc should be well washed with water, and the cask also filled up with water. (2) The clear liquid from which the zinc sodium sulphite has crystallized out consists of a solution of sodium hydrogen hyposulphite (hydrosulphite), and this is used directly as the bleaching agent, being diluted with an equal bulk of boiled water. The wool is steeped in this for six or eight hours, when the bleaching operation should be complete. After squeezing, the wool should be washed in boiled water, since, if water containing air is used, the fibre is apt to heat and become greatly depreciated, on account of the great affinity of the hydrosulphite for oxygen. The reaction representing the formation of the hydrosulphite may be expressed as follows:—



A considerable economy, both in time and cost, is claimed for this method as compared with the gas bleach or the bisulphite process.

*The Hydrogen Peroxide Bleach.*—The fact that the natural yellow coloring matter of wool is decolorized both by the action of reducing and oxidizing agents has already been alluded to. By oxidation the coloring substance appears to be permanently destroyed, whereas by treatment with reducing agents, e.g., in the case of the sulphur bleach, the original yellow color is somewhat easily redeveloped. The recognition of this fact has led to the rapid adoption of hydrogen peroxide as a bleaching agent, although the process is somewhat more costly than the sulphur dioxide bleach.

Several oxidizing agents have from time to time been proposed as bleaching agents for wool, hair, feathers, etc.; for instance, the manganates and permanganates of potassium, barium and lead, and the peroxides of hydrogen, barium, magnesium and sodium.

The disinfecting liquids, known as "Condy's Fluids," consist of alkaline manganates and permanganates, and their efficacy lies in the fact that they readily give off oxygen in presence of organic matter. In the same way, when wool, etc., is steeped in a solution of potassium permanganate, the liberated oxygen destroys the coloring matter, but simultaneously brown manganic oxide is deposited upon the fibre. In order to complete the bleaching process this has to be removed, and to this end a subsequent treatment with sulphurous acid is resorted to, whereby the brown insoluble dioxide is reduced to the white manganous oxide, which readily dissolves in the acid. This process

was at one time frequently used for bleaching feathers, and is used to a very small extent in wool bleaching.

Much greater practical importance is attached to the use of peroxides as bleaching agents. Theoretically speaking, no novelty can be claimed for this process, since the process of "grass bleaching," which has been in use from the earliest times, largely depends for its action upon the fact that traces of hydrogen peroxide exist in the atmosphere, and more especially in dew, rain and snow. Hoar frost frequently contains a considerable amount of peroxide, as much as 0.001 grain per litre having been found. Practically, however, the employment of peroxides dates back about twenty years, although a great impetus has been given to the process by the recent considerable reduction in price of hydrogen peroxide and the manufacture of sodium peroxide on a commercial scale.

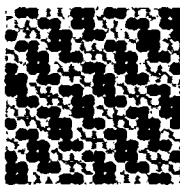
*Hydrogen Peroxide.*—This substance was discovered by Thenard in 1818, and when pure is a syrupy, colorless, transparent liquid of the composition,  $\text{H}_2\text{O}_2$ . It is capable of evolving at the ordinary temperature and pressure 333 times its volume of oxygen gas. It dissolves in water in all proportions, and is usually sold commercially as a dilute solution, containing 3 to 6 per cent.  $\text{H}_2\text{O}_2$ , and thus containing 10 to 20 volumes of available oxygen. When pure, hydrogen peroxide, in either concentrated or dilute aqueous solution, is comparatively stable, but in presence of organic matter, alkalis, metallic salts, or, indeed, of any solid matter, it is readily decomposed. The dilute commercial solution may be concentrated on a water bath in an ordinary dish at 75° C., until it contains about 50 per cent.  $\text{H}_2\text{O}_2$ . This may then be concentrated by distillation under reduced pressure, and after repeated fractioning, almost pure (99 per cent.)  $\text{H}_2\text{O}_2$  is obtained; it boils at 84°—85° C., is volatile in air, has a strongly acid reaction and irritates the skin. Two definite hydrates,  $\text{H}_2\text{O}_2 + \text{H}_2\text{O}$  and  $\text{H}_2\text{O}_2 + \frac{1}{2}\text{H}_2\text{O}$ , have been prepared in a solid condition at very low temperatures. Hydrogen peroxide found its first practical application as a cosmetic, and as a renovating agent for old oil paintings. For bleaching purposes it was first introduced by Hopkin & Williams, London, in 1875 or 1876, and afterwards in an improved form by E. De Haen, of Hanover. It may be prepared by decomposing barium peroxide ( $\text{BaO}_2$ ) by means of sulphuric, carbonic or hydrofluoric acid. One process is carried out as follows: Finely ground barium carbonate is moulded into bricks with sawdust and pitch, and heated in a furnace to about 1000° C. The barium oxide thus obtained is cooled to 500° C., at which temperature it absorbs oxygen from the atmosphere, and the  $\text{BaO}_2$ , being suspended in water, is decomposed by a current of carbon dioxide. The solution of hydrogen peroxide is then decanted off and the precipitated  $\text{BaCO}_3$  used for another operation. The preparation of  $\text{H}_2\text{O}_2$  from sodium peroxide will be referred to later. Commercially, hydrogen peroxide is sometimes known as "oxygenated water" or "ozonized water." It usually contains a

notable amount of metallic salts, chiefly barium salts, in solution, and is therefore somewhat easily decomposed. It is, however, much more stable in acid than in neutral or alkaline condition, phosphoric acid having the most preservative action. A small addition of sodium phosphate is, therefore, of advantage when a mineral acid is present.

Kingzett states that its stability is further increased by the presence of 2 to 3 per cent. of alcohol, a sample of  $H_2O_2$  which showed a 20 per cent. loss of strength in 176 days, remaining quite unaltered when  $2\frac{1}{2}$  per cent. of alcohol was added. The deterioration of commercial samples is also reduced to a minimum by storage in a dark, cool place. The strength of the 3 to 6 per cent. solution of hydrogen peroxide, which, as already stated, constitutes the commercial article, is usually indicated thus:  $H_2O_2$  (10 vols.),  $H_2O_2$  (12 vols.),  $H_2O_2$  (20 vols.), etc. This means that one volume of the liquid is capable of giving off 10, 12 or 20 times its volume of oxygen gas at the ordinary temperature and barometric pressure. Since, however, it is liable to considerable variation in strength, it is frequently necessary to make an actual estimation of the amount of  $H_2O_2$ . A 10-volume solution should contain (by weight) 3.04 per cent.  $H_2O_2$ , or 1.43 per cent. available oxygen.

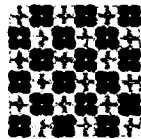
## Textile Design

No. 1.



A, worsted, light and intermediate shades,  $68\frac{1}{2}$  yards per ounce; weave with 62 picks per inch; dress in 4,950 ends; lay 66 inches in the loom; 12 $\frac{1}{2}$  reed, 6 ends in a split; end shrink 4 per cent.; clear finish to 58 inches; clean weight per yard, 15 ounces

No. 2.



A, worsted, intermediate shade,  $56\frac{1}{2}$  yards per ounce; B, worsted light and intermediate shades,  $56\frac{1}{2}$  yards per ounce; C, worsted, lively shade,  $56\frac{1}{2}$  yards per ounce. weave with 55 picks per inch; dress in 3,712 ends; lay 64 inches in the reed; 14 $\frac{1}{2}$  reed, 4 ends in a split, end shrink 4 per cent.; clear finish to 56 inches; clean weight per yard, 15 ounces.

## Dress

16 4 twist B.  
4 inter A.  
4 twist B.  
3 inter A.  
1 end C.  
24 4 twist B.  
4 inter A.  
48 6 twist B.  
16 inter. A

96 ends.

## Weave

16 4 twist B.  
4 inter. A.  
4 twist B.  
3 inter A.  
1 pick C.  
32 4 twist B.  
4 inter. A.  
48 6 twist B.  
16 inter. A.

104 picks in pattern.

No. 3.



A, worsted, dark shade,  $68\frac{1}{2}$  yards per ounce; B, light shade worsted,  $68\frac{1}{2}$  yards per ounce; C, lively shade worsted, 875 yards per ounce; D, dark spun, 875 yards per ounce, 3-ply used as one; weave with 60 picks per inch; dress in 4,096 ends; lay 64 inches in the reed; 16 reed, 4 ends in a split; B as indicated; end shrink, 3 per cent.; clear finish to 56 inches; weight per yard, 13 ounces.

## Dress:

84 6 light B.  
6 dark A.  
6 light B.  
1 end C.  
4 dark A.  
1 end C.  
96 ends.

## Weave:

84 6 light B.  
6 dark A.  
6 light B.  
1 pick C.  
4 dark A.  
1 pick C.  
96 picks.

### ESTIMATING COSTS.\*

In attempting to write an article upon the question of "costing," I know I am trespassing somewhat upon delicate ground; but, though this is so, it must be confessed that it is a subject in connection with hosiery manufacture that, at least, cannot be looked upon as the least important, for is it not upon this item that success or failure depends?

No business can be conducted successfully unless there shall be a return for all capital invested, which may be in the form of raw material, wages, wear and tear, etc. All these, and many other expenses in connection with a hosiery manufacturing concern, have to be met by the return. Such return can be satisfactory only where each item has had special attention, in order to be perfectly sure that it is correct, and that all of such items are included.

One of the first items that must be dealt with by the hosiery manufacturer is the yarn, which to him is his raw material. There are some few to whom such a statement would be scarcely applicable, as these take the raw wool and commence first the spinning of the same into such yarns as they may require. But as many manufacturers take the yarn as their first item, it is proposed, in this article, to deal with it at this starting point.

One of the first things that is required to ascertain the cost of the yarn in any article is to calculate the amount used in the manufacturing of such article. I purposely here introduce the word "manufacturing," and it is upon the proper meaning of the word that much depends. It does not mean the weighing of the finished article as put together in the rough, and simply taking the weight there registered. Certainly not. It includes all waste from any cause that may come from the handling of the yarn through all the processes of production. "An ounce for waste in winding is quite sufficient to cover that," I fancy I hear some one say; but I say, no!

Let us look further into the question, and in doing so, the first question that presents itself is, What is the yarn?

There are so many kinds of yarns used now—good, bad and indifferent, that each requires some study and great care in watching through the working process. We know that there are yarns that turn out all one could wish, but of these there is nothing to fear. It is when we come to mixtures and shoddies, or when working several kinds together to produce a given effect, as in plaiting, sandwiching, etc.

First, in winding, we find that more fly will come out of some yarns that would be calculated as total waste in others. Again, yarns may wind fair, but they cause terrible havoc with the knitting frame, resulting in waste as rovings or press-offs.

\*By J. H. Quiller from the *Textile Record of America*.

In well regulated factories this is at once detected by the quantity of waste made in percentage to the yarn used, as each class of work is kept separate and taken from the factory at stated intervals. Where this close inspection is not made, the bulk may be found to exceed its limits; but where the fault has materially occurred has been hid in the whole being put together.

To "cost" properly, each yarn should be tested on its own merits, and a fixed basis of loss ascertained, and all future "costing," where such yarn is used, should be based on the results ascertained by such practical tests.

Again, in the case of plaited and sandwiched goods, it is necessary to know the exact proportion of each of all the yarns being used together, and unless such proportions are known, how can the cost of the combined yarn be arrived at? It may be considered a small item, but on some classes of goods it amounts to much, as in making silk plaited goods.

Test carefully, by practical tests, the proportions consumed of each, but test this again by the arithmetical rules that such combinations include; make a double test rather than be wrong; let one system test the other rather than rely on either.

If these rules are followed out, then both waste and proportions can be calculated and the correct gross weight of yarn consumed may be arrived at, and it is this weight and thus alone that must be charged up if the "costing" is to be a correct one.

Having now got the cost of yarn used in an article, the next item to be considered is that of manufacture. This, of necessity, includes all the payments made, as, in the case of hose, for example, that of legs, heel, feet seaming or any other divisional parts into which such an article would or could be divided.

Or, again, in the case of shirts, cuffs, sleeves, bodies, rib-bottoms, seaming, putting in of sleeves, etc. To these, of course, must be added the winding of the yarn used, and this again should be calculated at the same weight as before, viz., the gross weight.

We come now to a system of usage which makes it somewhat difficult to arrive at the next and last item included under the heading of factory items; what may be referred to as department expenses.

We will suppose that the factory department is kept as a separate department, and that it is treated as would be a separate business. Then every detail of rent, interest and taxes must be ascertained along with depreciation, wear and tear, expenses, and management, etc., etc. The question at issue is, how to treat these in order that they may be safely included in arriving at the cost in this department.

I have before advocated, as one of the safer methods, that of ascertaining these expenses by taking an average from a previous year's trading. It is presumed that separate books are to hand to show the two necessary accounts, that of the actual year's turn-over, on the one hand, and that of all outgoing on the other.

Presuming we have these figures before us, it will be easily seen what percentage our total items of expenses are of the whole turn-over. Getting this percentage, we can then add the same in arriving at the factory cost of any goods.

But it may be said that no two years would show the same result. Decidedly so; but, on this system, each year would balance a previous year.

Let this be explained. We have a year of fair good trade and our percentage of expenses, of course, including all items, not forgetting, perhaps, the one most readily overlooked, viz., that of depreciation, will, for example, come out at 5 per cent. Add to this all new season's "costing," and should our next year's trade not reach the former year as regards turn-over, we may not have received a return equal to expenses; but, when the present year's expenses are known, we can then commence adding the extra percentage that our business has proved is

necessary. Should we then increase, we have an increase in return that recoups for any loss that may have occurred. Or, should the year again prove an unsuccessful one, our loss is not so great as it would have been had the expenses been "costed" at their old percentage.

This method of calculating brings out an important point too often lost sight of. It is that machinery standing still is incurring expense, and whether it be made idle by alteration of fashion or by shortness of trade, these expenses, going on, must be met, and the only source of income to meet them is from those machines that, for reverse reasons, are kept going. A new machine morally carries with it the cost of any machine it displaces, as it renders the same idle and unable to provide for itself.

I am not advocating the keeping of old machinery to be charged to new; for, when machinery has been made useless, the first loss made upon it is invariably the best; but still it is not wise to discard a workable machine until it has proved, beyond doubt, incapable, and has passed its period of remuneration.

A machine, to be profitable, must be earning its expenses at least, and should, of course, do more; but this is the least that can be tolerated. Many machines will do this by being "accommodation" machines, only making certain goods that might entail expense to be made otherwise.

All these points have to be dealt with on their particular merits. What I wish to point out is, that all expenses of a factory department can only be borne by the work there produced, and that such a department should be calculated on such lines if it is to be successful.

(To be continued.)

#### JAPAN AND ITS ECONOMICAL ASPECTS.

His Excellency Takaai Kato (Japanese Minister), delivered an address recently to the members of the London Chamber of Commerce, on "Japan and Some of its Economical Aspects," in the hall of the Skinners' Company, Dowgate-hill, London, Sir Albert Rollit, M.P., occupying the chair.

At the outset of his address his Excellency explained that the Empire of Japan, including Formosa, consisted of more than 400 islands and islets, and, excluding Formosa, had an area of 147,655 square miles, with a population (in 1894) of 41,813,215. About one-twelfth of the area was under cultivation for rice, barley, wheat, peas, and millet, while mulberry trees were covering an increasing area with the development of silk production. While the greatest attention was being paid to the furtherance and promotion of agriculture, the physical conditions of the country precluded Japan being a great agricultural country. Under these circumstances, industries of various descriptions, which were all on a limited scale until forty years ago, were receiving increased attention. Lacquer, porcelain, enamel and bronze ware, and bric-a-brac, which had spread the repute of the country far and wide, still formed important items of export; but with the introduction of machinery the industrial aspect of the country had gradually altered. Steam silk spinning works had become so numerous as to require an import of cocoons to keep them supplied, and the manufacture of silk piece-goods had made great strides. Cotton spinning, started in a tentative way little more than ten years ago, had in operation in May of last year 693,000 spindles, a number which would be increased within a year or two to 1,000,000 spindles. The production had hitherto been confined to coarse yarns, but the time would probably come when Japanese mills would turn out yarns of every description. Woolen fabrics were unknown to the Japanese until foreign commerce introduced them, because no sheep had been reared in Japan. The army, navy and police force were now clothed in wool, and many civilians wore raiment of the same material. Sev-

eral factories had been started to produce these articles, though the industry was, as yet, in its infancy; but, in all probability, it would become an important one, in spite of all the raw material having to be imported. Turning to mining industries, the Minister said precious metals were scarce in the country, and the only important minerals, so far, worked on a large scale were copper and coal. Copper had been worked from ancient times, but export on a large scale was of comparatively recent origin, reaching 5,500,000 yen last year. Steady progress had been made of late years, and it appeared probable that a similar ratio of increase would be maintained in the future, particularly because there were said to be some copper deposits in the country still untouched, and also because machinery was being introduced into mines hitherto only worked by hand. As to coal, its use on a considerable scale was coincident with the introduction of steam power, and fortunately for the industrial welfare of the nation, coal fields, abundant in quantity and fairly good in quality, were discovered in different parts of the country. The consumption had increased with the extension of railways, the adoption of machinery, and the rapid augmentation of steam tonnage; concurrently the export of Japanese coal to different Asiatic ports had become so large that Australian and English coals had been almost entirely superseded by their Japanese rivals, except for special purposes, in China, Hong Kong, and the Straits. The production of iron was exceedingly limited, and the bulk of iron and steel required was obtained from abroad. Great Britain had an excellent customer in Japan in these commodities, and would have for many years to come, provided Japanese demands were met in an intelligent manner. Rich and extensive iron deposits existed in Japan, which in time would receive the attention of capitalists, to whom the Government was setting an example in having decided to secure Parliamentary sanction to the establishing of a steel foundry. Having reviewed the fishing industry, the Minister described the development of commerce, and the radical change it underwent with the introduction of western institutions, by the application of which business was conducted on a scale not dreamt of a generation ago. This had not been an unmitigated blessing, and Japan had already suffered from the evils of stock gambling and bogus companies. Foreign trade, which was valued in 1880 at 18,000,000 yen (49,000,000 yen exports and 32,000,000 yen imports), rose in 1896 to 289,000,000 yen (17,800,000 yen exports and 171,700,000 yen imports), and in detail he reviewed the character of the increases. Means of communication and transport came next under review, a comparison being made between the old and modern methods. Within twenty-five years excellent roads had been constructed, a highly developed postal system had been brought into existence, all the principal parts of the country were connected by telegraph wires, there were railroads, trams, and electric cars, and, last but not least, numerous steamers plying coastwise or making regular voyages to foreign ports. At the end of 1895 there were 2,273 miles of railroad open, with great extensions in progress; steamships aggregating 210,000 tons had been registered, and since the first half of last year orders for more than 100,000 tons had been placed in this country; mail matter carried totalled 449,000,000 packets; telegraph wire mileage was about 31,000 miles over which 9,000,000 messages were transmitted, while depositors to the number of over 1,000,000 had a total of 29,000,000 yen in the Post-office Savings Banks. The Minister concluded by stating that Japan was a country full of hopes and prospects, and the nation's heart was set upon the realization of these hopes. The tide of progress and advancement which pervaded the country at present would receive a still greater impetus when the new treaties, now practically concluded with all treaty powers—after the excellent model which this country set three years ago—came into practical operation in two years' time, and when foreigners came freely into the interior to engage in business or other enterprises.

## Foreign Textile Centres

MANCHESTER.—The Jubilee holiday can scarcely be said to be altogether over as far as this market is concerned. So far as can be seen at present, there are no signs of weakness visible in the raw material. The first estimates of to-day have been increased from 10,000 to 12,000 bales, and prices have hardened a point or two, but there is no desire to buy heavily among any class of the cotton fraternity. Liverpool is evidently in a bearish frame of mind, but this is not unusual, and the state of this market does not at present warrant such a feeling. Nevertheless, there is not likely to be any fall in prices for some little time. The Eastern trade is looking up a little, and yarns are moving rather more freely than was the case a week ago. The favorable weather reports as regards the American crop are not passed unheeded, and as long as there are no unfavorable reports the bears will have a restless time. Cloth is firmer, and shippers will have to pay rather more for good makes than a few days ago. The demand for the best home-trade cloths is fairly good, but other departments remain slow. Long cloths are in some request. Fancy season's dress goods are fairly good. Velvets a bit slow. Prints of the best class are selling all right. The strenuous efforts now being put forth to extend the markets open to the sewing cotton firms of this country are well illustrated by the details of their operations in the China market. The Paisley houses are doing their utmost to increase the thread turnover in China, and are now making their goods known throughout the Empire. The British consul at Chefoo refers to this interesting fact in a report recently received at the Foreign Office. The traveller in China for the Scotch firms referred to is an Englishman, who speaks Chinese well. He travels all over the country to the principal cities introducing his cottons. Where it is worth while, he appoints a native agent, who receives a salary and a commission on sales, and in all cases he gives full information to the shopkeepers about prices, the best way to obtain new supplies, and so forth. In China, once a mark is well established and keeps up its reputation, it is very difficult to supplant it. These are the words of the consul at Chefoo, and they are full of suggestiveness. It is not long since Li Hung Chang was struck with wonder at the working of a modern sewing machine, from which it is fair to infer that this useful invention of modern times is not much used in China. If the sewing machine were only more widely known in China, British sewing threads would have a better chance in the empire. It is very important to observe the efforts made to extend the sales of threads in China, in view of the statements recently made regarding the difficulty of disposing of the output of existing machinery in England and Scotland. A good deal of the spinning necessary before the sewing thread is ready for the market is done in Scotland, a very large mill, fully equipped with the best Lancashire machinery, having been built north of the Tweed a few years ago by a large firm. The linen trade is rather quiet. Heavy shipments have been made to New York during the past few months, but there is now a lull in the Westward flow, a remark applying also to the Bradford trade. From Liverpool the consignments of linens entered for export to the States last week amounted to 2,127,644 yards. This is rather above the average, but it will be found on the 20th inst. that the figures are considerably less. The shipments of worsteds, woolens, and blankets from the Mersey to the United States amounted in value last month to over £148,000. This also is a very good total, due to the heavy demand for goods to arrive before the enforcement of the new scale of duties. The bulk of the goods entered under the foregoing heading are Bradford shipments. Leeds has an astonishingly small trade with the United States, and in this respect is quite an insignificant centre in comparison with Bradford.

LEEDS.—The Leeds clothing trade has not fallen off to the same extent as is usual after the Whitsuntide holidays, and the factories continue to be kept fairly going with orders for present use. What may be considered the best clothing season for years is finishing well. The character of ready-made suits and overcoats is every year showing a distinct advance, and the increasing sale of the higher classes of goods gives every encouragement to makers to push a trade still in an upward direction. In the heavy woolen districts the improved tone



recently noted continues, and although the end of the special demand for America appears to have arrived, there has been more business both on home and colonial account. Tweeds and serges are still wanted, and makers of ladies' goods of a good class are also well employed.

**BRADFORD.**—Bradford has received the official notification that it has been raised to the dignity of a city. As in addition to 1897 being the year of the celebration of the Queen's Diamond Jubilee, it is also the 50th year since the town received its charter of incorporation, the honor of the newly-conferred dignity is most appropriate, and both the Town Hall chimes and the bells of the parish church were set pealing as an acknowledgment. The advent of the Jubilee holiday so soon after Whitsuntide renders it somewhat difficult to ascertain all that is going on in raw material, as the market partook very largely of a holiday character. There are evidences, however, that the recently-renewed demand for English and the lower classes of crossbred wools and tops for exportation to the United States is nearly satisfied, and the question which now presents itself is whether there is sufficient life in the local trade demand to keep up prices to their present level. As stocks of English wools and of crossbred wools similar in character to these have recently been reduced to an unusually low level by the exportation to America, and as some considerable quantities of this year's clip, especially of Irish wool, have been taken on the same account direct from the country dealers, the season's supply will be lessened to this extent. All the wool combers who deal with these classes of wool are busy for some time to come, it is also to be assumed that there is a considerable home trade consumption of these long wools quite independent of the American trade. The local wool fairs are coming thickly upon us, and although prices are ruling low, they are quite equal to recent prices in Bradford; and it must also be remembered that as this year's supply of lambs is considerably under an average, that the clip of home grown wool will be at least a million less in 1898 than in 1897. In the finer classes of colonial wools of the merino character there is also an improved tone, and some topmakers are trying to establish a small advance, as they cannot buy wool to make tops at the recent low rates which have prevailed here. In mohair and alpaca the tone continues also more cheerful, and the improved demand for 32's mohair yarns for braids and for 240's mohair for crepons is fully sustained. The export demand for all classes of worsted yarns is still very slow, and recent suspensions in the hosiery trade on the continent will indirectly cause some loss to merchants here. The home trade demand, both for serge yarns and also for finer coating yarns, for costume purposes, is fairly healthy, but the trade in worst yarns for dress goods purposes shows very little improvement. In the piece goods business is quiet, both as regards worsted coatings and dress goods, and middle-class purchasers of the latter, on account of the cold spring and the intervention of the Jubilee holiday, are postponing their ordinary summer buying until the July sales. A large proportion of the dress goods trade for present-time use is still confined to quiet costume cloths, which are useful both for walking and cycling purposes, the recent broken weather having brought proofed fabrics to the front, and some of these have stood the test of both wet and dust most satisfactorily. For autumn, the best business is being done on very similar cloths to those which have been successful for the spring season, but the finish of the goods appears to be more tweedy and less smart. Some makers of dress goods who, with the help of the special rush for America, have been kept busy for spring, have really made very little special preparation for the winter trade, and are now again busy with their preparation of samples for next spring season.

**NOTTINGHAM.**—The marked activity of the past three months in lace shipments to the United States is likely to end soon because it will be too late afterwards to enter goods at New York under the existing tariff. Our exports of cotton lace to all foreign markets last month were valued at £162,000, against £134,650 for the same month last year. Values for the five months run to £994,796, against £885,787 in 1896, nearly every pound of the increase representing enhanced exports to America. Silk laces were exported in May to the value of £12,413, and for the five months to the value of £74,762. For the United States the total for the month is £6,013, and for the five months £34,547, against £5,408 and £33,241, respectively, last year, and £31,159 for 1895. Silk-lace manufacture, I may add, is slowly but

surely going out of this country. Even under such favorable circumstances as the present these goods refuse to take a respectable spurt. At the same time a large quantity of silk lace is used by English women, and the warehouses are full of attractive varieties. But a large proportion is of foreign make—another interesting result of free trade at home and cheap labor on the continent. The trade has been kept up by the heavy Jubilee demand, and manufacturers with orders *in arrear* have been working overtime to pull up. The cessation of this special business coincides with the cessation of shipments to America, and is not of particularly happy augury for the coming months. But down to the present Valenciennes laces and insertions, of which the varieties are very extensive, have been in very considerable request. Heavy laces have sold well in butter, natural and cream shades. Ordinary crochet laces are relatively slow, the export demand having fallen below the average. Irish trimmings, everlasting embroideries and similar goods are also slow and threaten to become severely dull in the near future. Plain nets continue to prosper owing to the extensive export trade. There is only a limited demand for stiff foundation nets, prices being too high to attract buyers. Mechlin, Brussels and zephyr tulles are steady and prices remain firm at the highest quotations. There are few new orders for curtains, but the deliveries of goods for previous orders during this week have been large.

**LEICESTER.**—The yarn market is fairly healthy, and a much-needed stimulus has been experienced in regard to export business and orders for the home trade, while prices are decidedly firmer. There is a fair inquiry for lambs' wool yarns, but the trade in fancy yarns has been extremely irregular. The hosiery industry is rather quiet at present, and the repeat orders for light fabrics have been very disappointing. Heavy fabrics are now attracting attention, and the prospects are more encouraging. The fancy branches are now embracing a wide variety of specialties, which make this department much more comprehensive.

**KIRKCALDY.**—In the linen trade manufacturers are still active, but fewer orders are being booked forward. Continued activity also characterizes the floorcloth and linoleum industry, the productive capacity of the various works being fully taxed.

**BELFAST.**—What business has been put through recently has been of small amount. Yarns have been very sluggish, and sales merely made to meet the daily requirements of manufacturers. Brown and hand-loom linens, in the various widths and weights, have sold to a very moderate amount at current rates. The home demand for finished goods keeps sluggish, but an improvement is expected after stock-taking. The export trade is up to a fair average. The United States orders are unimportant, but the latest advices are more encouraging. The European trade is about maintained.

**LYONS.**—The raw silk market at Lyons is quiet, and while all attention is devoted to the cocoon markets, which have opened in France as well as in Italy, manufacturers are purchasing very little raw silk. By keeping out of the market at present raw silk buyers do not act unwisely, as anything like a strong or even steady buying movement of raw silk at the present time would have as a natural consequence a stiffening of cocoon prices which would raise the average cost of the new raw silk. But while this may be a reason for the present quietness, it does not satisfy holders, some of whom for some reason or other have been forced to sell and have had to make concessions. Prices as a rule, however, have held their ground quite well and show greater firmness than the condition of demand would seem to warrant. There is a fair demand for the better grades of raw silk, and French and Italian raws are selling. The favor for muslin, crepe lisse and other tissues requiring strong twisted yarns has kept these silks in steady demand. In Syria and Broussa silk supplies are scarce. China and Japan silks are rather quiet and quotations fluctuate more or less with the rates of Asiatic exchange. In the last two seasons buyers have become so much accustomed to find all the raw silk they needed at the right time that the old custom of making raw silk contracts far ahead will not be followed this year. Few advance contracts have been or are likely to be made for raw silk except for some special purposes. Thrown silks are quiet. A fair business has been done in China trams. Advices about the crop are too contradictory for an estimate based on facts to be made about the new crop. So far it is known that nothing really serious has occurred to affect sensibly the



result, and in France it will be about equal to last year. The highest prices paid in France for new cocoons have been about 3 francs per kilo. During the week ending June 9th, the Lyons Silk Conditioning Works registered 99,212 kilos of silk, against 106,469 kilos the previous week, and 113,161 kilos the corresponding week of 1896.

**MILAN.**—The markets for fresh cocoons opened at lower figures than those of last year, but prices strengthened subsequently on the announcement of some damage in various districts, by which the total of the Italian crop might be lowered by a good percentage compared with last year. But even with the subsequent firmness the average of prices made so far is below that of last year. In Piedmont, 2.65 to 2.85 and 2.90 lire: the price paid for good qualities, but it is not unlikely that the 3-lire mark will be reached and passed. Compared with last year and with 1895, the following prices have been made in some of the cocoon markets: Alessandria, 1895, average 3.22 lire per kilo; 1896, average 2.97 lire per kilo, 1897, sales at 2.45 to 2.90 lire per kilo. Crema, 1895, average 3.08 lire per kilo, 1896, average 2.44 lire per kilo, 1897, sales at 2.20 to 2.50 lire per kilo. The raw silk market is quiet.

**ZURICH.**—The raw silk market is not active, and manufacturers are purchasing little, as they are waiting to see how the situation will shape itself in Italy on the new cocoons. So far Italian buyers of cocoons have been conservative enough not to drive prices too high, but in the later dealings prices have been advancing and of better average than at the opening markets, the 3-lire mark having been passed in a number of transactions. As regards quality and yield of the new cocoons, reports concede them to be better than last year, although this might not turn out to be the case in many instances, as the weather has not been very favorable. Prices of raw silk are hardening, and in China silk quotations are from  $\frac{1}{2}$  to 1 franc higher, due to reports of smaller exports for next season.

**CHEMNITZ.**—Again the importers have allowed a later date for the delivery of their goods, as they expect that the new tariff will not go into effect on July 1st. Large shipments are leaving this district, and manufacturers will have their hands full to get all the goods finished on time. On the better grade of hosiery, lises and fine maco cottons, orders are placed for delivery in the fall nearly to the same extent as in previous years. Only in the lower grades are buyers holding back. A manufacturer in this district, who makes high-class fancy hosiery a specialty, has made up a large line of entirely new styles in beautiful combinations, and says that he has taken orders which will keep him busy until September. Silk-plated hosiery will sell for next season. Pure silk hose is sold in fair quantities in black, and a large assortment of evening shades, several qualities being especially cheap and giving entire satisfaction to the merchant and the consumer. How trade in Swiss ribbed vests will be during the coming season greatly depends upon the rates fixed by the new tariff bill, but at present trade in those goods is rather dull. If manufacturers were dependent upon the American market alone, they could hardly keep their plants running. In fabric gloves trade will not be much smaller than in previous seasons, as the advance of 10 per cent. will not be felt much, except in the leading qualities, which are always sold at a very close figure. A dull spell is at hand now for this district, but it is expected that business will pick up again as soon as the new United States tariff rates are known. A great reduction in prices will hardly ensue. The factors have united themselves to a corporation whose aim will be to do away with the low wages at which the Chemnitz houses often obtained their merchandise, and which not only left no profit to the factor, but meant a loss for him. Now they will stipulate standard wages below which no factor is allowed to accept any orders, under penalty of a fine payable to the corporation. The united efforts of the exporters and factors may go a great way toward bringing about a healthier condition of affairs in the hosiery trade of this district, and result in a lasting benefit to the merchants who conduct their business in a straightforward manner.

A company is being formed in Stratford, Ont., to carry on the flax and cordage business of John Hogarth. Proposed capital \$30,000. The provisional directors are J. Walsh, O. Fleischauer, J. Henry, J. Hogarth, E. T. Duffon, F. Richardson, A. J. McPherson. W. Miller was appointed secretary.

## NOTES ON DYEING.

### SILKWOOL.

This subject, already dealt with, may once more be referred to, by giving the summary of an exhaustive essay recently published in the *Färberzeitung*. The essential features of the process for imparting to wool a silky appearance and handle, and the characteristic "scroop," are, it will be remembered, energetic oxidation, combined with the precipitation of fatty acid on the fibre. Of oxidising agents, chloride of lime and hypochloride of soda only come into question; the proportions and conditions employed vary greatly, and determine the final result. In all cases, there is, however, a pronounced loss of weight, and the fibre assumes a more or less intense color, which it may hereafter become necessary to again remove, as far as possible. Whether the chloride of lime or hypochlorite of soda solution be used cold or warm, and whether it be acidulated with hydrochloric or sulphuric acid, or rendered alkaline with caustic soda, the loss of weight appears to be more or less proportioned to the quantity of oxidiser. Thus, with hard knitting yarns, treated for 20–45 minutes at a temperature up to 70° C., the loss of weight progresses fairly regularly from 6 to 17 per cent., with the use of 1.5 to 7.7 kilos of chloride of lime per 10 kilos of yarn, the volume of bath employed being, in all cases, 500 litres. On the other hand, the amount of gloss and handle attained are by no means directly proportionate to the loss of weight, and also more or less independent of the intensity of coloration, other factors having as much influence in this respect as the mere weight of oxidiser used. From a practical standpoint it becomes, therefore, necessary to choose the proportions and conditions which achieve with the least possible loss of weight and the least coloration the most pronounced silk-effect. Some of the best results obtained by the author appear in the following table:—

TEN KILOS OF YARN TREATED IN 500 LITRES FLUID.

No.	Chloride of Lime Kilos. (clear solution.)	Treatment.	Gloss.	Handle.	Color.	Weight after Chlorination
1	3 (+ 1.5 litres hydrochloric acid)	45 minutes cold	Good	Good	Rather yellow	9.2
2	3 (+ 1.5 litres hydrochloric acid)	45 minutes at 50° C.	Good	Good	Lighter than above	9.2
3	1.5 (+ 2 litres hydrochloric acid)	30 minutes at 60° C.	Medium	Good	Slightly tinted	9.4
4	1.5 (+ 1½ litres hydrochloric acid)	45 minutes at 70° C.	Medium	Good	Slightly tinted	9.4
5	500 litres hypochlorite soda, $\frac{1}{2}$ "Be	20 minutes cold*	Good	Good	Dirty yellow	9.4
6	500 litres hypochlorite soda (+ 7.5 litres hydrochloric acid)	20 minutes cold	Good	Good	Strong clear yellow	9.2

\* "Soured" before and after chlorination with each time 2 litres of hydrochloric acid.

Accordingly, Nos. 1, 2, 5 and 6 show the best result for loss of weight, gloss and handle, whilst Nos. 3 and 4 preserve the best color.

A comparison should now be made of the methods for bleaching the chlorated wool, both as to the absolute efficiency and to the after-effects in dyeing. According to a German patent, the bleaching is effected by working 10 kilos of yarn in a bath of 320 litres, containing 500 grs. of tin crystals, and 1.7 litre of hydrochloric acid at 40–50° C., rinsing finally in dilute hydrochloric. Except with yarns excessively chlorated, this treatment is quite efficient, and has no unfavorable effects either on gloss or handle. The same, however, may be said of steeping for twelve hours in a strong aqueous solution of sulphurous acid, and though this latter process has certain inconveniences, it also brings with it decided advantages. On dyeing yarns bleached the one and the other way with 0.1 per cent. of rhodamine B extra, it will be

found that the tin-bleached fibres take by far a darker, but also a much flatter shade; other dyestuffs behave in the same way, so that for pale colors sulphurous acid throughout is to be preferred. As to level dyeing, neither of the two reagents has any unfavorable influence. Unevenness, particularly with light shades, follows much more frequently the use of larger quantities of chloride of lime solution than that of equivalent quantities hypochlorite of soda, and as the difference in cost is but slight, the latter oxidiser is throughout to be recommended.

As to charging with fatty acid, it is better to effect this in one operation in "broken soap," than by "souring" either before or after clear soap. The results are both quantitatively and qualitatively better, but certain limits must be observed or the goods will become liable to mark off.

From these observations the following directions are arrived at:—

(1) For light shades. With 10 kilos of knitting yarn use, in a bath of 500 litres, the soluble portion of 1.5 kilo of chloride of lime with 1.5 to 2 litres of hydrochloric acid: work  $\frac{1}{2}$  to  $\frac{3}{4}$  hour at 60–70° C.

(2) For dark shades. Use for the same quantity of yarn and the same volume of liquid, 3 kilos of chloride of lime and 1.5 litre of acid and manipulate for 45 minutes at 50° C.

(3) For either light or dark shades. Use for 10 kilos of yarn 400 litres of hypochlorite of soda  $\frac{1}{2}$ ° Be sp. gr. with 3 litres of acid, and work for half an hour at 50° C.

Bleach, if required, in aqueous sulphurous acid. Soap, before or after dyeing, for ten minutes at 50° C. with 2 grs. of marseille soap and 12cc. of 10 per cent. sulphuric acid per litre.

#### FORMATION OF OXYCELLULOSE.

A curious case of oxycellulose-formation has recently been observed by Dr. E. Knecht. The circumstances are these: A piece of calico is mordanted with chromium in the well-known manner, and steeped in a warm 3 per cent. peroxide of hydrogen solution, rendered alkaline with ammonia or caustic soda. The chromium-hydrate rapidly leaves the fibre, forming yellow chromate, the cloth at the same time getting more and more tender, until it almost drops to pieces, whilst unmordanted calico in the same bath remains unaffected. On treating the two samples in methylene blue, the one will scarcely become tinted, whilst the other takes a full shade. Similarly, if cloth is printed with chrome-mordant and then discharged in alkaline peroxide, on dyeing a distinct pattern results. The phenomenon can only be explained by assuming that, by the intervention of higher oxides of chromium, oxycellulose is formed.

#### PURIFICATION OF WASTE WATER FROM PRINT-WORKS.

A lecture on this important subject was recently held before the Manchester section of the Society of Dyers and Colorists, which it is not well possible to give in abstract, those interested will find an illustrated reprint in the Society's journal. The best precipitant, according to the lecturer, is a basic ferric-sulphate, containing about 5 per cent. Fe<sub>2</sub>(OH)<sub>6</sub>, together with 5 to 10 per cent. of sulphate of alumina—the water to be first rendered slightly alkaline with lime. As filtration medium, oxide of iron, the burnt ore of sulphuric acid works, deserves preference; it should be arranged in strata of particles of various size, covered with a layer of gravel, and topped with sand.

#### AN IMPROVED CHROME MORDANT.

Some years ago Knecht and Prudhomme simultaneously devised a process for mordanting with chromium, based on the observation that bichromate of soda and sulphite do not react in presence of an excess of ammonia. Koechlin, who endeavored to introduce this process into practice, recommended a slop-padding liquor, containing, per gallon, bichromate of potash, 7 ozs.; bisulphite of soda, 56° Tw., 14 ozs., and liquid ammonia, 14 ozs. Pad, dry, age for two minutes and wash. Though a fair amount of chromium oxide is fixed, in this manner, the process has not been a practical success. These proportions have recently been revised by Gardner, who, by increasing the amount of bisulphite to 30 ozs., claims to have obtained excellent results in the dyebath, to which, however, in many cases, a lime-salt should be added. Whites are reserved as usual with citrate of soda, attempts to resist reduction of the chromate by printing in alkali before steaming have failed.

#### BENZOCHROME BLACK

Benzochrome blacks B and N (Bayer) have for some time found rather extensive application on cotton yarn, particularly warp, as they have over aniline black the advantage of being fast to rubbing, ungreenable, and of not tendering the yarn, whilst they compare very favorably with diazotised blacks in regard to fastness to light, to crabbing, acid, and running. Still these blacks, even after chroming, lack depth, a defect which can be remedied by a combination with aniline black, brought about in a simple manner during the chroming operation. For this purpose, the cotton (wool, yarn, warp, or cloth) is dyed as usual, say with 4 per cent of benzochrome black N (from a standing bath), 5 per cent. of calcined sulphate of soda, 1 to 2 per cent of soda ash, washed and manipulated for one hour in a bath of 4 per cent. bichromate of potash, 2 per cent bluestone, 4 per cent sulphuric acid, and 3 per cent aniline salt—entering cold and raising gradually to 60° C. Then rinse, soap, rinse again and dry. It will be understood that such a combination must, to a great extent, be free from the defects attached to either of its constituents if used separately.

#### DISCHARGES IN ANILINE BLACK.

A lengthy paper on this subject by Dr. Lauber (*Lehm's Farberzeitung*) contains nothing new in principle, but as the formulæ supplied may be assumed to have been practically tried, some of them shall be copied here. Of slop-padding liquors two are recommended. The first one is prepared by mixing 1 gallon of chlorate of soda solution, containing 12 ozs., with one gallon of yellow prussiate solution, containing 24 ozs., and adding to the mixture one gallon of aniline salt solution, containing 38 ozs. For a deeper black, equal volumes are mixed of chlorate of soda 9 $\frac{1}{2}$ ° Be, yellow prussiate 14 $\frac{1}{2}$ ° Be, and aniline liquor, containing 36 ozs. of aniline salt per gallon. Both blacks, slop-padded, and dried in the hot flue at a temperature up to 55° C., are said to give excellent whites, with a color prepared from Starch 40 ozs., water 7 pints, gum tragacanth 4 $\frac{1}{2}$  pints, acetic acid, 6° Be, 1 $\frac{1}{4}$  pints, acetate of soda 110 ozs acetate of lime, 15° Be, 2 pints; bisulphite of soda, 35° Be, 2 pints, the two latter ingredients being added after boiling and cooling. The albumen paste used with pigments and lakes is prepared thus: 16 ozs of arseniate of soda, dissolved in one-half gallon of hot water, are added to 7 gallons of cold water; in this solution, at a temperature of 30° C., steep 47 lbs of best blood albumen, without stirring, for 24 hours, then add one gallon of castor oil; mix well and strain. For blue discharge, prepare the following color: 85 ozs. of ultramarine, 1 quart glycerine, 1 gallon albumen paste, as above, are thoroughly ground in a mill, then add a mixture of 66 ozs of acetate of soda with one quart of water, and stir until all is dissolved. A blue less liable to "stick in" may be made by dissolving 40 ozs. of diamine sky blue FF (Cassella) in 1 $\frac{1}{2}$  gallons of water, containing 40 ozs. of soda-ash, and working this color into a solution of 100 ozs. of acetate in 3 gallons of gum tragacanth. For red, take red lake 2 $\frac{1}{2}$  pints, chrome yellow  $\frac{1}{2}$  pint, albumen paste 3 quarts, water  $\frac{1}{4}$  pint, acetate of soda crystals 16 ozs. These proportions are good only for the first black, the second one requires more acetate.

Other pigments, direct colors, or lakes, are applied similarly

#### NOVEL TEXTILE FABRICS.

The adage "Nothing succeeds like success," is applicable to all of the Franklin Institute exhibitions in the past, and presages equal, if not greater, enthusiasm and success for the proposed Textile Exhibition next fall. The past successes have been attained not by accident, but by judicious selection of time, place and object, and by the intelligent co-operation of the managers and members of the Institute, and last, but not least, by hard work. The Electrical Exhibition, for example, which is still regarded as having been an important epoch in the development of electrical science in its industrial application, owed its success in no small degree to the untiring efforts of the late Colonel Charles F. Banes, chairman of the Exhibition Committee, and his co-workers. There were nearly 300,000 paid admissions, and many exhibits were shown for the first time, which have since become daily necessities in our business life and in our household economy.

The introduction to public notice of meritorious novelties is one of the most important practical features of these exhibitions,

and preliminary investigation proves that there is in store for our citizens and other visitors to the Textile Exhibition a series of surprises in the wide range of novel fabrics now made in this country, and in new effects or uses due to novel treatment of familiar materials which will there be shown. We propose, therefore, from time to time, in advance of the opening of the show, to describe some of the most interesting of these novelties, in order that our readers may have an intelligent understanding of what they are likely to see.

Some time ago a tiny booklet, entitled "What is Pantasote?" filled with dainty illustrations, came to our notice, and curiosity impelled investigation. We ascertained that a practically new manufacture of growing importance is now being quietly conducted at Passaic, N. J., in a factory of no inconsiderable size, representing an investment of more than \$200,000. This new material, strange to say, was first adopted by the naval authorities of Great Britain, Germany and other foreign countries, and more recently by the United States navy and other large consumers in this country. A brief description of this material, avoiding technical details, may prove interesting. Several years ago an artificial gum, closely resembling raw caoutchouc, was produced in a still in which certain materials had been subjected to heat and pressure. The chemical analysis of this substance made by various experts proved two important facts. First, that the gum was a permanent compound which would not disintegrate nor become brittle by age, and that it was unaffected by moisture, by heat (in any moderate degree), or even by strong acids. It was apparent that these were valuable qualities. The next question was How can this gum be utilized? A series of experiments soon developed several applications, the most important of which commercially is the production of artificial ornamental leather for upholstering purposes, made by saturating closely woven textile fabrics of cotton or linen by successive immersions of long rolls of duck, drilling, or other suitable material in a solution of the gum, and then passing the goods thus impregnated with this substance, called "pantasote," through embossing rolls or plates, thus imparting any desired pattern in relief. The finished product differs radically from various imitations of leather which have hitherto been made and used, and is, in fact, superior to leather in many respects. Thus it is water proof and germ proof, and owing to these qualities, and also to the fact that it has no tendency to absorb grease or to become sticky in hot climates, the material is largely used in furnishing and upholstering cars made in England for railroads in India and Afghanistan. No stuff fabric can be used in those hot climates, and no leather or other substitute therefor has been found to compare with this material for such purposes under such conditions. The German Emperor's yacht "Meteor," the Prince of Wales' yacht "Britannia," and the yachts of many of the foreign potentates and nobility have all their interior work and deck cushions of pantasote, made in New Jersey. Proprietors of the London cabs, ambulances and private carriages have adopted the material because of its sanitary qualities and superior durability. As an evidence of the large export market for meritorious articles of American production it may be stated that some tens of thousands of square yards of this material—of which, perhaps, none of our readers have heretofore even heard the name—were shipped abroad and sold in Europe in 1896 for purposes we have herein indicated.

Pantasote is now being extensively adopted in this country for smoking cars and trolley cars, and several of the new American war vessels have been furnished with it. Another use of surprisingly large outlook is for car curtains. It appears that every kind of material, from the ordinary Holland shade to most expensive fabric specially woven and costing several dollars per yard, has been used for this purpose, but all fade, catch dust, get wet and rot. The water-proof and unfading qualities of pantasote make it especially adaptable for these purposes, and it has been adopted recently after prolonged tests, by the Wagner Palace Car Company, the New York Central and other railroad companies, as standard material for curtains. The Committee of Science and Arts of the Franklin Institute investigated the merits of the material, and sub-

jected the fabrics to various tests, including a "time test" of more than a year's duration, and made a very favorable report, which concluded as follows:

"The investigating committee has placed itself in correspondence during the last two years with a number of manufacturers, builders and others having these products in use, in order to learn from them how the pantasote products have stood the test of practical service. Replies to the inquiries have been received from manufacturers of furniture, car builders, carriage builders, boat and ship builders, and others. These replies are uniformly favorable, and indicate that for upholstery and carriage work pantasote is the best substitute for leather that has thus far been placed on the market. The institute accordingly awards to the Pantasote Leather Company, of New York, the Edward Longstreth medal of merit."

The Passaic factory consists of a main building 200 feet long by 80 feet wide, 2½ stories in height, with several wings or extensions varying from 130 feet long by 30 feet wide to 85 feet square, built of brick, and situated in a six-acre plat, which are utilized for the bleaching and curing processes. The company has ample means for the development of the industry; but it has "made haste slowly" in its effort to market its products, believing that new outlets would naturally develop as the merits of the material became known, and were proved by actual use.—*Ex.*

#### ROYAL CARPET COMPANY'S STRIKE.

The following paragraphs taken from two successive issues of the Guelph, Ont., *Mercury*, give some interesting information about the recent strike in the Royal Carpet Co.'s factory at Guelph:

"The weavers, about fifteen in number, employed at Burrows Bros. Royal Carpet Works, on Nelson Crescent, went out on strike this morning in anticipation of a big cut in wages. Mr. Burrows, when seen about the matter at noon, said that up to the present no cut in wages had been made; the weavers were being paid at the old figure, but he admitted a cut in the near future was imminent. The reasons necessitating the reduction in wages, he says, are the competition from factories with power looms and American makers, particularly the latter. The protection now afforded against the latter was not sufficient under the present fiscal arrangement, and Messrs. Dodds and H. H. Burrows interviewed the Premier previous to his departure for England, but on account of the number of alterations having been made in regard to woolen goods, etc., no action was taken. At the present rate of payment, for the best work, the weavers get what practically amounts to 12c. a yard, and 9c. and 7c. according to grade. The proposed cut is 2c. all the way down, admittedly a big reduction, but Mr. Burrows says he was compelled to do it as some factories in the city have been getting labor at the cut rate all winter. The busy season for the carpet men is just closing and does not open up again with much vigor till the fall, consequently the firm say the strike will inconvenience them very little, and they intend to hold out. Several hands from rival factories are with the striking employees. Mr. Burrows says the men were making from \$7 to \$9 a week under the old arrangement, and they would make about that much under the new arrangement, as he told them he would reduce the staff and provide steady work for the smaller staff all the year round. At present the work is divided up, during the slack season, among a larger staff than is at all necessary. The men think that the reduction, with the slack time, does not give them enough to live on.

"The striking weavers of H. H. Burrows' carpet factory take exception to some of the statements made by Mr. Burrows to our reporters yesterday. As to weavers making \$7 to \$9 a week under the old rate, that is simply bosh, they say. Not one man has averaged \$1 per day for months past. In theory, a man might make \$7 a week, if fully employed the year round without a break, but the practice is very different; the work is very unsteady. The reduction, the men say, took place on Monday morning last, and one or more started on the reduction—there were two or three working at full price to accommodate Mr. Burrows in getting a few pieces out—but as soon as the weavers learned that an apprentice started at the reduction they all left the shop in a body, and the apprentice also. No factories were

working at the reduction all winter, the men say. One place in the city with a few looms made carpets of a low grade at the reduction, but these few weavers had the inducement of 800 to 1,000 yards on a beam at one time, while at the Royal Carpet Works, they say, a man is lucky if he gets 120 yards at a time. It is only a short time since Mr. Burrows, they state, reduced the price of high grade carpets one cent per yard, for which other factories are paying a higher price. They further state that Mr. Burrows took his cut price-list to a shop that has been paying the full price and they refused to sign it. The workers will hold out against a reduction, as it is hard enough to keep body and soul together at the present rate without cutting prices down to \$4 and \$5 a week on an average. They claim there was no necessity whatever for the cut, as other factories have been, and are, paying the regular prices."

**TEXTILE IMPORTS FROM GREAT BRITAIN.**

The following are the sterling values of the textile imports from Great Britain for May, and the five months to May, 1896 and 1897:—

	Month of May.		Five months to May.	
	1896.	1897.	1896.	1897.
Wool .....	£ 190	£ 190	£ 5,211	£ 8,114
Cotton piece-goods .....	£19,768	20,309	233,981	161,355
Jute piece-goods.....	13,955	6,478	61,922	39,760
Linen piece-goods.....	5,408	6,173	70,975	49,342
Silk lace .....	704	252	5,655	2,645
" articles partly of .....	1,002	506	13,053	7,647
Woolen fabrics .....	8,182	6,783	98,394	86,548
Worsted fabrics .....	20,590	23,547	236,647	228,192
Carpets .....	5,254	5,136	104,699	77,368
Apparel and slaps.....	16,755	17,608	150,067	118,081
Haberdashery .....	4,230	6,456	72,484	71,137

**NEW DYESTUFFS.**

**ANILINES.**

*Acid Violet 4. B.G. Extra*—*Acid Violet 3. B. extra* The latter shade dyes very level and does not precipitate in concentrated solutions, the solution remaining clear. The first named color has a very clear shade, and being very cheap may supersede some of the older brands.

*Sulphon Cyanines*, from one of the leading branches of the color industry. This class of color may be worked by the simplest of all methods, and producing such fast shades that they answer the highest demands. Sulphon cyanines are much in use in slubbing wool dye-houses, a fact which puts forth various requirements as regards to fastness. The leading brands are: *Sulphon Cyanine G* and *3. R.* and lately added are *Sulphon Cyanine 3. R. extra* and *5. R. extra*, somewhat redder and fuller, otherwise similar to the earlier brands.

*Sulphon Acid Blue B. and R.*—Two new wool-dyeing products. Both qualities are pure bright shades of excellent fastness as compared with other acid blues. Goods dyeing easily level; dye with Glauber salts and sulphuric acid. Goods dyeing level with difficulty, we recommend dyeing first with acetate of ammonia and finally adding acetic acid, which completely exhausts the bath. By working *Sulphon Acid Blue* with *Victoria Black*, a navy of extraordinary fastness to light is produced. These new blues are fast to steaming, and being so are suitable for melange printing. Fastness to washing and rubbing very good; to milling not so good; fastness to light almost equal to *Alizarines*.

*Pluto Black B.R. and G.*—The market, although not lacking in suitable direct cotton blacks, is still without standards having certain properties, as no doubt felt by certain dyers. One of the properties is a better fastness to light. The recent adoption of this class of direct dyeing cotton colors for gentlemen's suitings has no doubt produced this want. We have pleasure in placing before you three brands of *Pluto Blacks*, *B.R. and G.*, all of which are very fast to light. This refers specially to the *G.* brand. All brands exhaust the dye-bath well, and as soon as a demand is established and increased, the price will be materially reduced, making it one of the cheapest blacks on the market.

*Induline R. Extra*—Since *Induline 5 R.* has been brought out, an attempt has been made to produce a brand of greater brightness and purity. Being successful, *Induline R extra* is now ready to be placed upon the market. This new brand will also be found useful in leather coloring.

*Croceine Orange G.N.*—Complaints having been recently made regarding *Croceine Orange G.* that it precipitates in the bath, and goods dyed were found to rub, an improved method in the manufacture has been resorted to, *Croceine Orange G.N.* being produced. This color does not precipitate or rub off when dyed. It is also of great clearness and good solubility. Dyed skins on both cotton and wool forwarded gratis by the *Dominion Dyewood and Chemical Company*, Toronto, sole agents in Canada for the *Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany.*

**NEW ALIZARINES.**

*Alizarine Cyanine W. R. S. Powder.*—The practical value of this color, especially with respect to fastness to wearing, is acknowledged now that the after chroming process with Fluoride of Chrome has been firmly established and can be worked satisfactorily. As a proof of this, we might mention that *Alizarine Cyanine W. R. S.* has been adopted for the dyeing of army cloth, and with best success on moltonsin, in combination with *Brilliant Alizarine Blue*.

For prices, etc., apply to the *Dominion Dyewood and Chemical Co.*, Toronto, sole agents for the *Farbenfabriken, vorm. F. Bayer & Co., Elberfeld, Germany.*

**CHINESE TRADE.**

In view of the fact that a Canadian cotton manufacturing firm is about to vastly enlarge its plant so as to enter the Chinese market, the following observations recently appeared in an English contemporary:

"There has been issued within the past few days a report from *Consul Brenan*, at *Chefoo*, to the *Foreign Office*, in which he deals in a masterly manner with the conditions prevailing in China with regard to foreign trade. It is a matter of common knowledge that treaties exist between China and foreign states by which the latter are entitled to the right of entry to eighteen Chinese ports, where goods supplied by them can be landed and distributed, subject to a duty of 5 per cent. It is commonly supposed that this duty constitutes the whole of the impost which is put upon foreign goods entering China, but so far from this being the case, *Mr. Brenan* shows that the important work of distributing the goods received at the ports over the interior forms a very much more important factor than the mere introduction of them into the treaty ports. He remarks that it is obvious that Chinese merchants are more and more monopolizing the advantages derivable from these treaties, and he points out that all over China one result of the conclusion of these treaties has been to improve the status of the Chinese trader. From this fact he draws the deduction that the direct interest of British merchants in Chinese trade is decreasing, while that of manufacturers in this country is practically increasing, and that there is a great opening for British traders and workpeople if the internal trade of China was exploited and developed. This is precisely the work which is being done by the *Blackburn Commercial Mission*, and it is a work which, as we shall see, is one demanding a large amount of attention.

*Mr. Brenan* points out that the two ports of *Hong Kong* and *Shanghai* form vast entrepots from which practically the other ports are being supplied. While British merchants retain their direct interest in the goods while they are at the distributing centres, it is very rarely—and becoming more rare—that any similar interest is felt in the goods at the treaty ports or after they leave them. The reason for that is, that the distributing agency is becoming exclusively Chinese, because the Chinaman submits to the exactions of the native official with more equanimity than will a foreigner. While in theory the import duty is supposed to be all that is leviable on foreign

goods, a view of the ease which can be absolutely enforced, the trouble of maintaining this condition as the goods pass from point to point in the interior is so enormous, that it is substantially a dead letter. The reasons for this will be stated at greater length a little later, but it is at present sufficient to point out that all the machinery of distribution is passing into Chinese hands. The result is that the merchant, not being a distributor, is content to sell the goods and make his profits, having afterwards no further interest in them. He will not, therefore, take any pains to find out what are the wants of the people of the country; but will, if goods are submitted to him, do his best with them when his native customers come to buy. The effect is that, with the exception of cotton and woolen goods, 75 per cent. of the imports into Shanghai are entirely on Chinese account, while of cotton goods, about 50 per cent. remains under the control of British merchants; thus any infraction of the treaty applications is more directly followed by the Chinese than by the foreign merchant, and the result is that they are allowed to continue without any very vigorous protest. If it so happened that a foreign merchant attempted to distribute the goods in the interior of the country, the delays which take place, and the obstacles put in his way are so great, that a considerable loss is very speedily experienced.

We cannot follow Mr. Brennan in detail through the very lucid explanation which he gives of the various practices which tend to the result we have named, but they may be briefly stated as follows: China is a country of very large area, which is ostensibly ruled by a central government at Peking, but is rarely obeyed by the numerous provincial governments, with all their enormous staff of subordinate officials. These officials are created only after they have spent large sums of money in acquiring the position they occupy, and they are almost without exception recompensed by the exactions which they can obtain by any means whatever. The result is, that when goods which have a transit pass arrive at one of the interior towns where there is a customs barrier, the subordinate official demands, and from the Chinese trader receives, an additional tax, which is known as "likin." This would not be so bad if the tax were honestly levied and honestly collected, but in many cases it is in excess of the legal amount, and the plunder obtained by the official is increased by the return of only part of the articles liable to duty, the duty on the remaining articles being divided between the official and the merchant. Mr. Brennan gives an absolute case in which a British merchant took up country two packages of thread, for one of which a transit pass had been obtained, while the other was free. After paying all the taxes demanded, the uncertified case paid \$4.18, while the certified case, passing free to its destination, was there subject to a tax which made the total amount extracted \$4.36. Had a Chinaman been in charge (says Mr. Brennan) he would have been harassed and taxed very much more heavily at every station. The official ring is so strong, and the terrorism it excites is so great, that any attempt to overcome this state of affairs is well-nigh impossible of success. We cannot follow Mr. Brennan through the lengthy consideration which he gives to certain recommendations of merchants, but he concludes his report with a number of remarks which are of great value.

He begins, and very rightly so, with laying down the principle that the resources of China must in the first place be developed. The country is one of extreme poverty, and before it can be made really valuable, either to ourselves or to any other country, the status of the mass of the people will of necessity have to be improved. Against any movement in this direction the Chinese officials raise every obstacle which is in their power, and until the official class is purified there will only be slow progress made. If China came under the administration of any European power, there is little doubt that there would be an enormous improvement in the general

status of the people. Although theoretically the central government in Peking is supreme, the provincial officials are so capable of interposing obstacles that no matter what pressure is put upon them they are able to evade the performance of the decrees. China is at present in financial need, and will have to find a further sum of £2,500,000 yearly to meet her recent loans, the total yield of the revenue being only about £33,000,000. Thus the Chinese Government will no doubt turn to the prospect of raising from the foreign customs this additional sum of money, and it is this factor which Mr. Brennan looks to as a means of bringing about further concessions, which will facilitate trade by enabling foreign powers to advance the development of the country. At present domestic trade is strangled, and until this state of affairs is altered, the full development of this remarkable country is quite impossible. Mr. Brennan points out that even native produce passing from Chiu-kiang into the interior pays 15 per cent., and he very rightly lays emphasis on the fact that if the Chinese Government wish to see the revenue of the country increased, they will do well to reorganize the scheme of internal administration. Another feature which he presses upon the Foreign Office is the appointment at all important Consulates of a commercial secretary or attache, independent to some extent of the consul, and having duties to perform entirely different to those usually carried out by the consul. The duties of this official should, he, Mr. Brennan suggests, as follows: The consideration, and, if possible, the satisfaction of the suggestions of Chambers of Commerce; the reception of, and reporting on, trade circulars; the collection of samples of new products exported; the careful watch on goods which are taking the place of British goods, and the forwarding of samples with all information; the reception and forwarding of early information as to public works and contracts; the suggesting of new outlets based upon observation of the requirements of trade; the compilation of commercial reports of the kind common in the United States, as set out in the succeeding article; changes in the course of trade for the requirements of the people. He further urges that a commissioner of this description would be in more complete touch alike with officials and the government of which he is a servant, and the Chamber of Commerce in this country, so that having nothing to do but to study the whole of the conditions prevailing, he would be enabled to give sound advice.

Mr. Brennan concludes a report, of which this is a very inadequate summary, and which should be read by every one in Lancashire, at least, who desires to know the conditions under which our trade can be increased with China, by a number of suggestions which are based upon his experience. He points out that goods which had not been previously exported to China, on being put on view in Shanghai, have been bought, and that a trade is accordingly being done with them. The Scotch sewing cotton manufacturers have pushed their goods by means of an Englishman speaking Chinese fluently—a very essential condition—and this example is being followed by the sugar manufacturers of Hong Kong. Where trade has once been opened up in that way Chinese agents can be appointed, and thus the development aided. While it is quite possible for a firm of the size of the sewing thread manufacturers to take this course, it would only be possible for others to succeed in the same way if they combined with other firms, but Mr. Brennan suggests that missionaries, although charged with other duties, might do a good deal in pushing business without interfering with their proper work. The report refers to the now well-worn complaint of English conservatism in making up, and the greater facilities given by German firms, and it is pointed out finally that the right man is as important as the right policy, and that it would be advisable to employ men at a high salary if they were of the right type. It is quite evident that a field is open to enterprise, and the Blackburn Mis-

sion, although somewhat decried, will undoubtedly do a good deal to develop it. It does not matter how the trade comes, whether through native merchants or not, except that it is desirable to ascertain what goods can be sold if presented. This is a matter of more interest to manufacturers than to merchants. We commend this report, which can be obtained for five pence, to the notice of all our readers, because in it they will find the subject dealt with in not only in its smallest detail, but also with a wide grasp which is very valuable.

### THE QUEEN'S CARPET.

The gift of the women of England to the Queen, in commemoration of her Majesty's Diamond Jubilee, was a superb Axminster carpet, intended for use on the dais in the Throne-room at the Jubilee celebration, and on other State occasions. H. and M. Southwell, Ltd., Bridgnorth, were commissioned to execute the order. The make is that known as "Real Axminster." It has been woven in one piece, every stitch being tied in by hand. The number of actual stitches it comprises is 4,262,400. With regard to the quality of the carpet, the question of the employment both of silk and mohair was carefully considered; but the finest quality of English-grown worsted yarn was ultimately adopted, as giving the firmest and best surface. The carpet is 16 ft. 9 in. long by 18 ft. 5 in. broad. It has occupied twelve women, the largest number that could work on a carpet of this size, for twelve weeks. The design is emblematical of the Queen's Empire. The centre consists of a damask of two royal reds, the Tudor Rose and Star of India working alternately in the ground. In the middle is introduced the Garter with the motto, "Honi soit qui mal y pense," encircled by a garland of oak leaves, and surmounted by the Imperial crown. In the border, the ground shade of which is a rich cream or ecru, appear alternately—entwined with a flowing ribbon—the rose, thistle and shamrock, and the lotus of India, both the flowers and foliage being introduced. At each corner the border widens out in semi-medallion fashion, and—emblematical of India, Africa, Australia and Canada—are introduced wonderfully faithful representations, both as regards anatomy and coloring, of the tiger, elephant, kangaroo and beaver, each encircled with a semi-garland of oak leaves. The crown appears in each corner. In the outer margin is a conventional leaf band in soft golds, the border falling to plain ruby on the extreme outer edge. The whole of the design has been worked out by Mr. H. T. George, the head artist in London of the firm, who derived every detail from careful studies at the "Zoo," the Natural History Museum and other similar sources. The treatment is wholly "natural," as best fitted to the Imperial surroundings; and no aestheticism, so-called, has been aimed at either in style or color.

### FABRIC ITEMS.

The regulations to collectors of customs in regard to the reciprocal tariff of Canada, under the customs tariff, 1897, were recently issued as follows: "Persons making entry of goods under the Canadian reciprocal tariff of 1897, are required to furnish a separate invoice of the articles entitled to such entry, with a declaration annexed thereto from the exporter or his agent, made before a notary public or commissioner for taking oaths, or the chief municipal officer of a city or town, or a British consul, or before the president or secretary of the chamber of commerce, as to the origin and value of the articles. A declaration must be made that the said invoice contains a full and true statement of the fair market value when sold for home consumption of the said goods at the time and place of the exportation thereof direct to Canada; that such fair market value includes any bounties, drawbacks, royalties, rents or charges that may have been or are expected to be allowed or paid on the said goods, or is payable on patent rights or because of the lease of such goods, or for the right of using the same, and that no different invoice or account thereof has been or will be

furnished to any one. Where invoices are made out at prices below the fair market value for consumption in the country of exportation, invoices must show in a separate column or otherwise by addition thereto such fair market value."

The Central Agency, Limited, has received an Ontario charter to carry on business as thread merchants.

Burns & Lewis, wholesale clothiers, of London, are in financial difficulties. The firm consists of Geor. Burns and Montgomery Lewis, and has been in business for a long number of years. At one time they did an extensive trade, but latterly this appears to have fallen off to a considerable extent. The liabilities are about \$32,000, and assets \$38,000, leaving a surplus of \$6,000. The present trouble is said to be due to recent heavy losses, last year alone the firm suffering to the extent of \$12,000 in this respect. A few years ago they showed a surplus of \$65,000. Manufacturing firms are the principal creditors, and especially the cotton and woolen companies of Montreal. The Merchants Bank is also interested.

E. E. Starr, who has represented the firm of G. Goulding & Sons, wholesale milliners, 55 Bay street, Toronto, in Western Ontario for the last thirteen years, has severed his connection with the firm, and gone to Montreal, to assume the management of the millinery department of H. H. Wolff & Co. Mr. Starr was at one time an office boy in the establishment he is leaving, and rose to his present position. He has also been a director of the Commercial Travellers' Association of Canada for five years. Previous to his departure, the employees gave him a rousing send-off, and presented him with a solitaire diamond ring, as a mark of the esteem in which he was held by them. Mr. Starr made a feeling reply, and assured his fellow-employees of his regret at leaving behind so many warm friends.

Geo. R. Gordon, Vancouver, B. C., clothing, advertises retiring from the retail business.

Many in the wholesale dry goods trade throughout Canada will be pained to hear of the death of Malcolm Morrison, which took place at his residence in Westmount, Montreal, on the 3rd July. Mr. Morrison was 64 years old and was born in Greenock, Scotland. He was for about twenty-five years in the woolen commission business, formerly with Wm. Shaw & Co., but afterwards on his own account, and more recently in partnership with a Mr. Louson. He formerly belonged to the Montreal Rifle Rangers, and took much interest in athletics. He was himself a fine specimen of physical manhood, and his passion for athletics was the cause of his death. About a year and a half ago he was playing with a skipping rope among a group of children and undertook to make 100 consecutive skips, which he did, but in accomplishing the feat he was taken with a pain at the heart, and on calling in a doctor it was found that the heart was displaced. He was ordered by the doctor to cease work, and it was thought he would only live a few days, but he lingered on till the 3rd inst. He leaves a wife and seven children.

A good deal of sympathy has been expressed for the wholesale dry goods firm of Lonsdale, Reid & Co., Montreal, whose financial difficulties have been gathering for some time past. This firm rose out of the late firm of T. James Claxton, but some time after its formation Mr. Lonsdale retired and went to the old country, leaving Mr. Reid as principal partner, with a small interest held by A. B. Macpherson, an employee. The firm has a highly honorable name, but besides lack of sufficient capital their methods were somewhat old-fashioned to suit the requirements of modern business, and they could not make headway. On taking stock it was found that they had a nominal surplus of \$6,000, and it was decided to wind up the business. Mr. Macpherson is now in England, where about half the creditors are, arranging for the liquidation. With careful handling, it is expected that the liquidation will be satisfactory to all concerned.

The John Eaton Co., departmental store, Toronto, has assigned

The estate of Gorman Bros., dry goods, etc., Maynooth and Renfrew, Ont., has been wound up through John McD. Hains, Montreal. The estate has paid a fourth dividend, amounting in all to 60 cents in the \$1. The principal creditors were Hodgson, Sumner & Co., Montreal. The Renfrew branch has been closed up and the business will now be carried on by J. T. Gorman at Maynooth.



## Among the Mills

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

The Berlin Shirt and Collar Co recently offered 35 cents on the dollar.

T. A. Code's knitting mill, Perth, Ont., is running night and day on orders.

The Berlin, Ont., Belt Boot Company, G. Rumpel, has recently put in two new sets of cards.

G. W. Ward, superintendent of the Almonte, Ont., Knitting Co's Mills, is now recovering from a severe illness.

P. B. Reid, Toronto, has returned to his home in Charlottetown P. E. I., and will become a partner in the Tryon, P. E. I., Woolen Mills Co.

The cloth board manufactory now being completed at Parry Sound, Ont., is attracting favorable comment by the perfection of its equipment.

G. D. Gervais & Frere, of St. John's, Que., have bought out the Victoria hosiery mill of that town, formerly run by Montgomerie & McGinnis.

A small fire was discovered in the Brodie mills, Hespeler, Ont., at an early hour recently. The damage, which was slight, was caused chiefly by water.

The larrigan factory, owned and run by Jacob and Alexander Marshall, Fillershouse, N. S., was totally destroyed by fire not long ago. The origin of the fire is unknown.

The Maritine Sulphite Fibre Co., of Chatham, N. B., are making extensive improvements to their paper mill, adding two large digesters and a third machine for running off the pulp.

The Harriston, Ont., Flax Manufacturing Co. (Limited), with a capital stock of \$6,000, and the Wingham, Ont., Farmers' Flax Co. (Limited), with a capital stock of \$7,500, have been incorporated.

The Listowel, Ont., *Standard* said recently that wool was coming in at the rate of about 3,000 lbs. a day at the Listowel Woolen Mills, which presented a lively scene with farmers' teams from morning till night.

Wm. Cox, one of the foremen in the Parks cotton mills, St. John N. B., entertained a number of his friends at his home recently, and overseers of the mills presented Mr. Cox and his bride with a handsome fruit dish.

The report published by a trade contemporary that the St. Croix mill of the Canadian Colored Cotton Mills Co. had been refitted with new machinery at a large outlay is, the secretary informs us, entirely without foundation.

The carding mill in Hastings, Ont., operated by Wm. Ford, of Norwood, and owned by H. M. Fowlds & Son, was completely destroyed by fire July 6th, originating in the picker room. The building was valued at \$2,000, no insurance. The loss on the stock is not known.

McShay Brothers, of St. Catharines, Ont., have leased a portion of the fourth floor of the Pettibone-Cataract Manufacturing Company, and will start a branch of their hair-cloth manufactory in Niagara Falls, N. Y. They will use electric power, to be furnished by the Niagara Falls Hydraulic Power and Manufacturing Company.

The Merriton mills of the Canadian Colored Cotton Mills Co. have recently been enlarged by the addition of new broad looms and German napping machines for the manufacture of cotton blankets. These are manufactured in all sizes and have been very favorably received by the trade on account of their cheapness and handsome appearance.

The James R. Ayer Company, Limited, has been incorporated in New Brunswick, to manufacture moccasins, larrigans, boots and shoes, harnesses, and other smaller leather made articles, and the carrying on of a tanning business. The incorporators are.—H. A. Powell, W. Bedford Dixon, W. Milner, A. Ogden and A. Smith, Sackville, N. B.

Woolen, cotton and paper manufacturers should read C. A. Meincke's advertisement on page 216, and adopt his suggestion by sending for quotations. Mr. Meincke, although only a short time in the business in Canada, has, through perseverance and by dealing in only high grade of stock on close margins, succeeded in working up a large trade in chemicals.

Bellhouse, Dillon & Co., the well-known dyestuff and chemical firm, are introducing in the Canadian market a new type of extract of log-wood for woolen goods, the "Rio Cabre" brand, perfectly free from adulteration of any sort. The woolen manufacturers who have tested the new extract speak very enthusiastically of it. Samples are furnished to manufacturers on application.

D. K. McLaren, manufacturer's agent in cotton and woolen mill supplies, 24 Victoria Square, Montreal, has been appointed special agent in Canada for the Lancashire Patent Belting and Hose Company of Manchester, England. This company makes the broad claim of being the pioneer manufacturers of the so-called camel hair belting, having been 36 years in the business, and do a large trade throughout Great Britain and the colonies. Mr. McLaren is now in Manchester, promoting business connected with his English agencies, but expects to return early in August.

J. K. Jones, a married man, who had only a few days before arrived from England, met with a peculiar death while working in the Dominion Cotton Mills Co.'s Hudon mill at Montreal. According to the report, he was working on a pile of loose cotton, which he and two companions were preparing to bale, when he sank into the pile. As soon as his companions missed him, they searched for him and got him out, but he was already unconscious and died before the ambulance arrived. It appears the deceased had been suffering from heart disease, and what with the intense heat of the day and the fright received a fatal shock.

The activity which has characterized the wool market of the large exporting centres like Toronto, has been felt all over Canada. The local papers, in wool growing districts, during the past month, have contained frequent references to the keenness with which rival firms competed in clearing up the market. The *Simcoe, Ont., Reformer* says: "Local exporters of wool continue to rush the clip into the United States as rapidly as possible, and the exports from the Canadian points are expected to be the largest in the history of the trade." The *Manitoulin, Ont., Expositor* declares: "To say 'hard times' would be nonsense. Just how much wool changed hands here this week would be out of the question to say." The *Beeton, Ont., World* alleges that "American buyers in the Canadian market are buying all the wool for speculators in the United States that they can get, and the markets are very active." The *Simcoe, Ont., Reformer*, in a recent issue said: "The wet weather has been interfering with shearing operations and delaying deliveries of the new clip. This seems unfortunate for the growers, as the market is still in a state of uncertainty, and there is a danger of wools coming in late this month meeting with lower prices than those now quoted. In the meantime, all those in a position to get wool in hand are rushing it in here."

# Wool Washers

## Dryers and Carbonizers

# KITSON - - -

## MACHINE CO.

LOWELL, MASS.

# CROWNED VICTOR

... .. By the Mayor of Chatham. ... ..

---

The "Cleveland" Won

✱ ✱ The Great Relay Race.

**Making the Wonderful Record of 223 miles in 12 hours  
and 1 minute, without either puncture or break-  
down of any kind.**

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**-- You Can Always Rely on a CLEVELAND. --**

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**H. A. LOZIER & CO.,**

Toronto, Ontario.





**English, Australian and  
B. A. Wools  
Tops, Noils and Wastes**

ALSO SPECIALTIES IN

**ALPACA MOHAIR CASHMERE  
VICUNA CAMEL HAIR  
PERSIAN and other Foreign Wools.**

**Root, Benn & Co.**

BRADFORD, ENG.

Agent. **ROBERT S. FRASER, 3 St. Helen St., Montreal**

**Medalists**  
City and Guilds of London, Eng.  
on the Technology of Dyeing in Theory, Practice and  
Chemistry of Dyeing.

The above should be satisfactory proof to our competitors, and our patrons, that we understand our business. Some make great advertisements, but where is their record of what they can do? Be Dyers and Finishers of Dry Goods in the piece. Also Millinery Goods.

**BRITISH AMERICAN DYEING CO., Gold Medalist Dyers**

Principal Offices  
221 McGill St., Montreal 123 Bank St., Ottawa  
90 King St. East, Toronto 47 John St., Quebec  
JOSEPH ALLEN, W. R. ALLEN, Technical Managers; Dyers and Medalist City  
Managing Factory and Guilds of London Inst., Eng. in charge of Works.

There is an important bill now before the Pennsylvania Legislature, asking for an appropriation of \$100,000 to the Pennsylvania Museum and School of Industrial Art, of which the Philadelphia Textile School is a department. This amount is required for use in the two years beginning June 1st, 1897, and ending the same date, 1899. The Philadelphia Textile School is the leading institution of its kind in America, and while at the present time it is in active operation and doing an incalculable amount of good to the textile industry of Philadelphia and vicinity, it needs assistance of a substantial character from the State, as above mentioned, to insure its successful continuance. Affording instruction of the most practical and vital kind to the poorer and middle classes, the income of the school naturally from such sources is only nominal, and the work which it has done, and the results it has achieved, are really wonderful. A large portion of the valuable equipment and machinery which is used in instructing at the Textile School has been donated outright by various manufacturers and friends of the institution. Professor L. W. Miller and E. W. France, of the management of the school, have rendered valuable services to the institute and textile manufacturers generally, in systematizing the work of the institute in such a way as to make the instruction given of the most practical and sensible character. Each county of the State is entitled to a free scholarship in the Philadelphia Textile School.

A FORMULA for cleansing fabrics without changing their color or injuring them in any way is one secured two or three years ago by the Society of Arts in England. Its base is raw potatoes and it is simple enough to be tried by anybody without much effort. Raw potatoes are grated over clear water in the proportion of two fair-sized potatoes to a pint of water. Grate till the last bit of fine pulp has dropped into the water, then strain the mixture through a coarse sieve into another vessel holding the same amount of clear water, and let the second liquid stand until it is thoroughly settled. Pour off the clearer part of the liquid and keep it for use. The solid materials are rubbed or sponged with the potato water, then washed in clean water, dried and ironed. The thick sediment left after the settling can be kept and used to cleanse thick fabrics like carpets and heavy cloths.

ESTABLISHED 1859  
**THE C. TURNBULL CO.,**  
OF GALT, Limited.

MANUFACTURERS OF

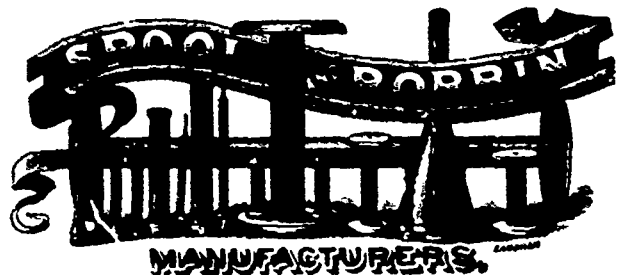
Full Fashioned Lamb's Wool Underclothing, Hosiery and  
Knitting Yarns. Perfect Fitting Ladies' Ribbed Vests,  
Sweaters, Jerseys, Knickers.

THOMAS KER

J. HARCOURT

**KER & HARCOURT,**

ESTABLISHED 1857



Orders by Mail  
will receive prompt  
attention.

**Walkerton, Ont.**

See that all your  
**LINEN THREAD**  
 and . . .  
**SHOE THREAD**  
 carries  
 this Trade Mark:



IT IS  
 ALWAYS  
 RELIABLE

**THOS. SAMUEL & SON, SOLE AGENTS**

8 St. Helen Street, Montreal  
 22 Wellington Street West, Toronto  
 473 St. Valler Street, Quebec

FULL STOCK CARRIED AT EACH ADDRESS

**JAS. A. GANTLIE & CO.**

MONTREAL and TORONTO

**GENERAL MERCHANTS AND  
 MANUFACTURERS' AGENTS**

Canadian Tweeds, Flannels, Dress Goods, Knitted  
 Underwear, Blankets, etc., etc.

Representing in Canada:

F. P. SAVERY & CO., Muddersfield and Bradford, Eng.

Also ALDOYS KNOPS, Aachen, Germany.

J. CUPPER SOHN, Hartscheid, Germany.

WHOLESALE TRADE ONLY SUPPLIED

**DICK, RIDOUT & CO'Y**  
 TORONTO, ONT.

Manufacturers of

Jute and Cotton Bags

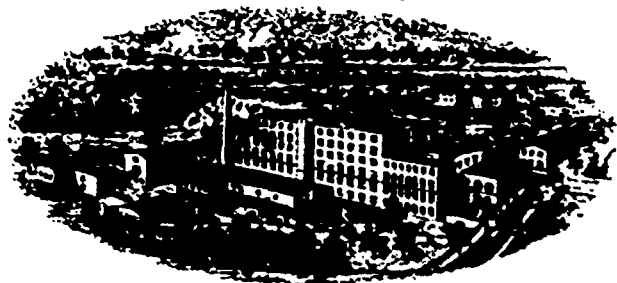
Horse Blankets, Hessians, Buckrams

Tailors' Canvas

Hop-Sacking, Binder Twine, Yarns, Etc.

Agents for LOUIS BREHNS & SONS, Manchester, England,  
 Velveteens, Velvetins, Furniture Coverings.

**ROSAMOND WOOLEN CO., ALMONTE, Ont.**



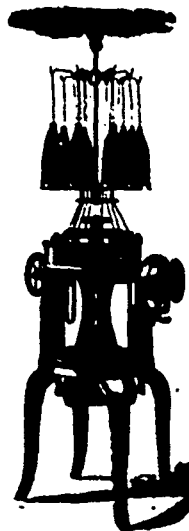
Fine **TWEEDS, CASSIMERES, and Fancy WORSTED  
 SUITINGS AND TROUSERINGS**

Color, warranted as fast as the best British or Foreign goods.

**Richard Schofield, Toronto**

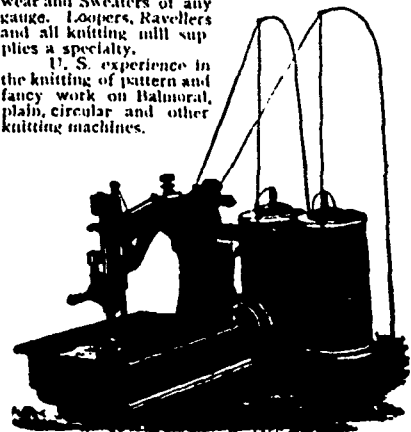
Manufacturer of all kinds of

**Power Knitting Machines**



Machines for knitting ladies' and men's ribbed Underwear and Sweaters of any gauge. Loopers, Ravellers and all knitting mill supplies a specialty.

U. S. experience in the knitting of pattern and fancy work on Balmoral, plain, circular and other knitting machines.

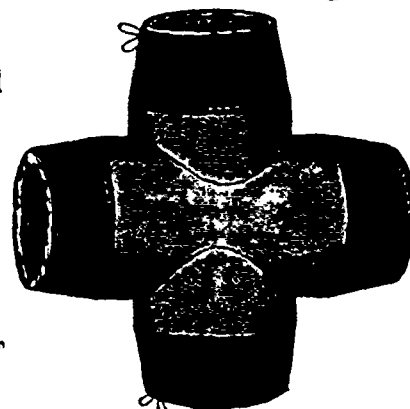


Ontario agent for the well-known Union Special Sewing Machine for plain and ornamental stitching as used in the manufacture of shoes, gloves, under wear, etc. 14 Court Street.

**... MICA ...**

**Boiler Coverings!**

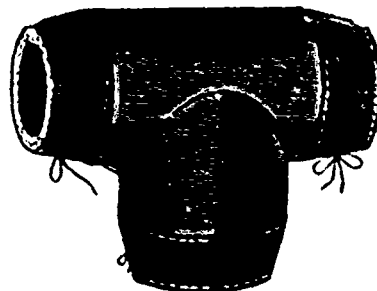
All Steam  
 Users should  
 See the  
 New Mica  
 Boiler and  
 Pipe  
 Covering



CROSS CLOSED.

It is Flexible, Durable  
 and a Magnificent  
 Non-Conductor  
 ...of Heat...

Tested by Mechanical Experts of the Canadian Pacific Railway Co., Grand Trunk Railway Co., Michigan Central Railway Co., Boiler Inspection Insurance Co., and proved to be the **Best of all Non-Conductors.**



TEE

Full particulars, reports of trials, prices, testimonials, &c., &c., from

**Mica Boiler  
 Covering Co.**

LIMITED.

9 Jordan Street

TORONTO

**PERSONAL**

The friends of Alex Ewan, of Alex Ewan & Co., agents for the Merchants Manufacturing Co., Montreal, will be glad to hear that he is now recovering rapidly from his severe attack of pleurisy and hopes to be about again in a few days.

The death is announced at the advanced age of 86 of John Coristine, the founder of James Coristine & Company, the old wholesale fur house of Montreal. Mr Coristine, who retired from business some years ago, was one of the best known business men of Montreal of the older generation.

Fred Mallison, of Mallisons', Limited cotton spinners, Bolton England, is paying a visit to the leading textile mills of Canada in behalf of his company, who are spinners of single and double yarns. After a tour through Quebec and Ontario, Mr Mallison will visit the textile centres of New England. It is probable that the company will appoint James A. Cantlie as resident agent in Canada for the yarns.

**CHEMICALS AND DYESTUFFS.**

Business continues fair, but with no demand for forward delivery. The following are current quotations in Montreal —

Bleaching powder .....	\$ 2 00	to \$ 2 10
Bicarb soda .....	2 25	" 2 30
Sal soda .....	0 75	" 0 80
Carbolic acid, 1 lb. bottles .....	0 32½	" 0 35
Caustic soda, 60° .....	1 80	" 1 90
Caustic soda, 70° .....	2 25	" 2 35
Chlorate of potash .....	0 15	" 0 20
Alum .....	1 35	" 1 50
Copperas .....	0 70	" 0 75
Sulphur flour .....	1 75	" 2 00
Sulphur roll .....	1 75	" 2 00
Sulphate of copper .....	5 00	" 6 00
White sugar of lead .....	0 07	" 0 08
ich. potash .....	0 10	" 0 11

Sumac, Sicily, per ton .....	\$55 00	to \$60 00
Soda ash, 48° to 58° .....	1 25	" 1 50
Chip logwood .....	1 90	" 2 10
Castor oil .....	0 09½	" 0 10
Cocanut .....	0 06½	" 0 07

**ENGLISH 58<sup>n</sup>, SODA ASH AND CHINA CLAY**

Can be bought cheaper of undersigned than from any other firm in the Dominion.

**C. A. MEINCKE,**

Send for Quotations. ✂ 183 St. James St., MONTREAL.

**A. KLIPSTEIN & COMP'Y**

122 PEARL STREET, NEW YORK

**Chemicals and Dyestuffs**

ANILINE COLORS OF EVERY KIND

SPECIALTIES

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

Also CAUSTIC POTASH FOR WOOL SCOURING

WRIGHT & DALLYN, Agents - - HAMILTON, Ont

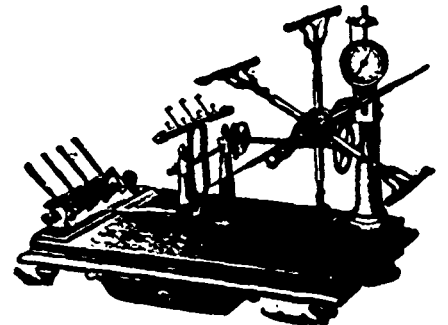
**W. H. HARRAP**

**ENGINEER, MACHINIST,**  
RICHMOND HILL,  
SALFORD, MANCHESTER, ENG.

Telegraphic Address: "HARRAP, Salford."  
Contractor to H.M. Government.



Maker of Improved Sewing Machines for sewing Piece Ends, "Wet or Dry," of any Thickness, by Treadle, Steam or Hand Power.  
Maker of latest Improved Scutcher for opening Fabrics and detaining the Twist.  
Improved Machines for opening out Crimps, Creases, and Curled Edges, and Guiding Fabrics Centrally and Automatically.  
Maker of Dye Jigs, Lapping Machines, Open Soaping and Washing Machines, Dampers, Bowls, Scrip Balls, Valves, Taps, and all Brass Fittings.  
Maker of Wrap Reels, Wrap Blocks, Yarn Examiners, Yarn Twist-ers, Yarn Testers, Hank Quadrants, Shaft and Spindle Indicators, Barrel Stands, Umbrella Hank Stands, Worsted Hauling Machines, Roller Covering Machines, Cloth Testers, Rove Reels, Cloth or Grape Measuring Machines.



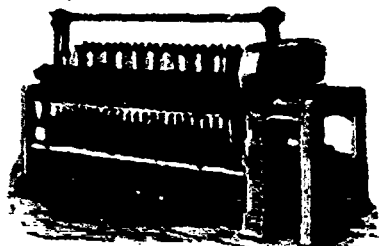
ALL KINDS OF SPINNERS' ACCESSORIES

**Brooks & Doxey**

Manchester, England

Telegrams: Union, Manchester, Athlons, Boston

Makers of Cotton, Cotton Waste and Woolen Machinery



WE have a complete set of our latest Cotton Machinery at work in our Show Rooms at 161 Pearl Street, Boston, and our agents, MESSRS. W. L. HAINES & COMPANY, will always be glad to see buyers and to explain the various valuable improvements embodied in the machines. Our machinery is made of best materials only, particular care being paid to the finish of the various parts, and is constructed very substantially so as to withstand the highest speeds, and give the greatest production combined with best quality of work.

**THE WOOL MARKET.**

TORONTO.—The rush with which the new clip was taken up has not quite cleared the market, and in spite of the immense quantities exported, considerable parcels continue to come on the market from day to day. Good merchantable fleece brings 20 to 21 cents; rejects and blacks, 16 to 17 cents; pickings, 9 cents; unwashed, 12½ cents. Several of the Canadian mills have entered the market freely this month, and indications point to considerable output this season by the strongest firms.

MONTREAL.—The market has taken quite a start, and some good sales have been made of foreign wools to Canadian manufacturers at an advance of 5 to 10 per cent., and as wools from the other side cannot be replaced even at this advance, wools of all sorts are held firm at 10 to 15 per cent. advance. Stocks are getting low, and manufacturers are unwilling to pay any advance until compelled to do so; but the colonial wool sales which are now going on are at 10 to 15 per cent. over last series of sales, and good competition. There appears, therefore, to have been an unusually large amount of buying in London by continental and English buyers, to account for this, since it was anticipated that the shortage of American purchases would have made prices easier. No Cape wool can now be had in Montreal at less than 15 to

17 cents, and B.A. wools are quoted at 28 to 35 cents. Quebec wools are rather late in coming in.

W. T. Pearson, tailor, Barrie, Ont., has assigned to W. B. McCulla

The Montreal Fringe and Tassel Works have put on the market some very pretty Diamond Jubilee designs in braid sets for ladies' dresses. Messrs. Moulton & Co. have been rewarded for their enterprise by a brisk demand for their novelties.

An assignment was recently made by S. Harris & Co., hats and furs, Montreal, on demand of Blatfield, Stamp & Heacock, London, Eng. The liabilities are about \$40,000. The following appear in the list of creditors: M. Vineberg & Co., \$6,200; Blatfield, Stamp & Heacock, \$7,327; G. Gaudig & Blum, Leipzig, \$3,000; O. de Langehungen, Saarunion, \$2,628; N. Haendler & Son, Leipzig, \$2,481; Robert Meyer, Leipzig, \$2,091; J. E. Mollenr, St. Johns, \$1,018; A. Vogel & Co., \$1,445; Croil & Mahoney, Truro, \$988; Radigner & Guasch, Leipzig, \$882; Axon Grundy & Rowbotham, Stockport, \$711; J. Robinson & Son, Stockport, \$770; L. Solomons, \$702; J. Saulniers, Truro, \$806; Ashton & Co., Manchester, \$500; M. Doniger, Cheetham, \$548; Otto Erler, Leipzig, \$520; D. Kolner, Leipzig, \$533; G. Anderson & Co., Toronto, \$675. The stock of the insolvent has been bought by M. Vineberg & Co. at 41 cents on the \$1

**STEAM AND POWER**



**NORTHEY  
—GO., LIMITED.**  
TORONTO, ONT.  
**LAURIE ENGINE CO.**  
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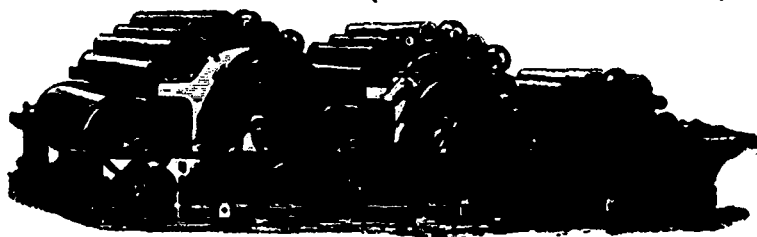
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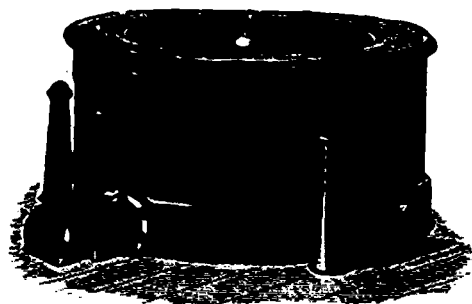
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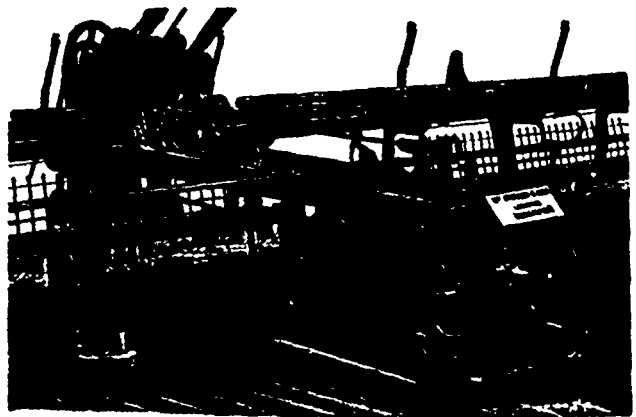
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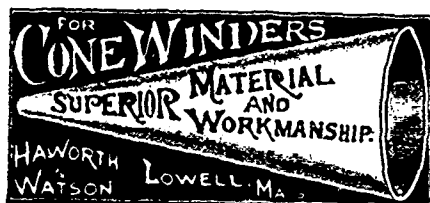
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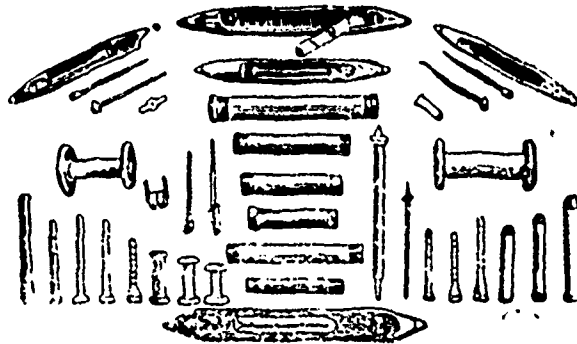
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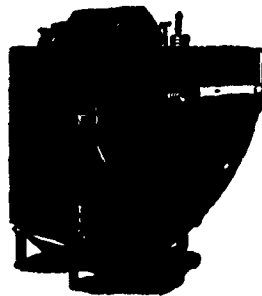
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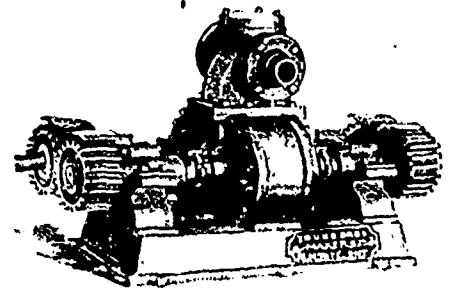
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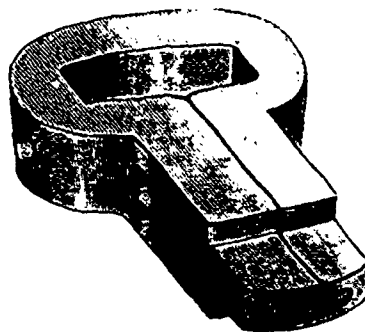
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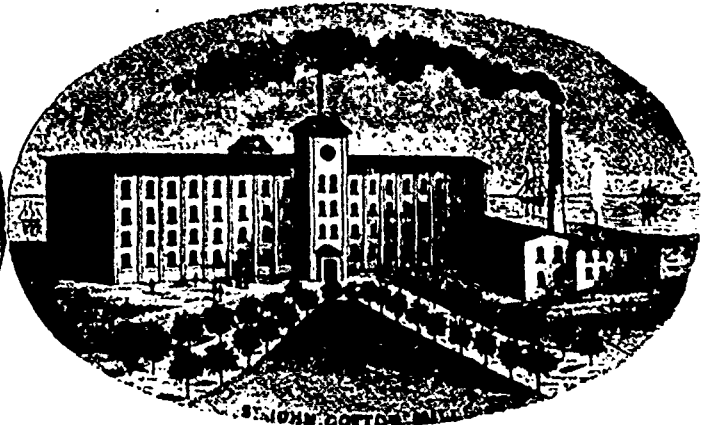
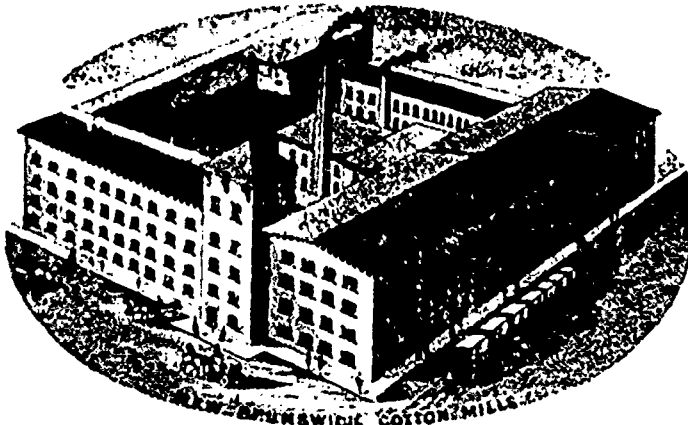
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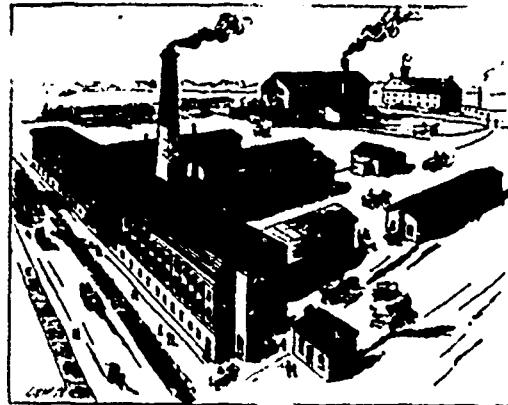
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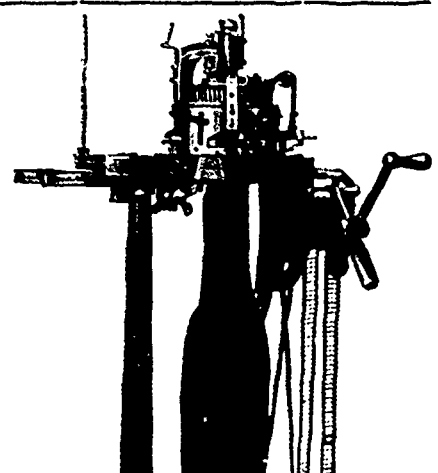
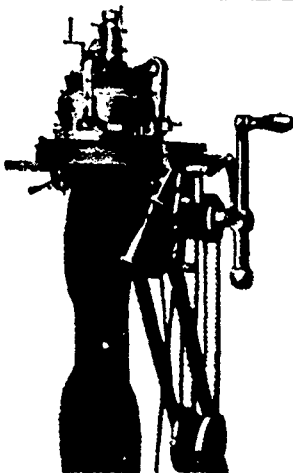
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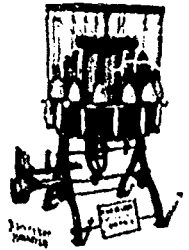
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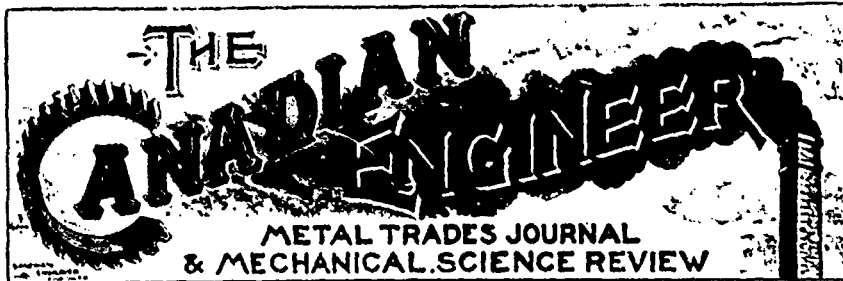


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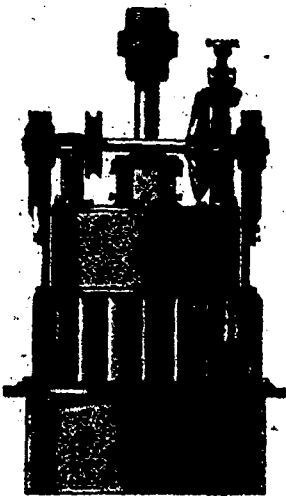
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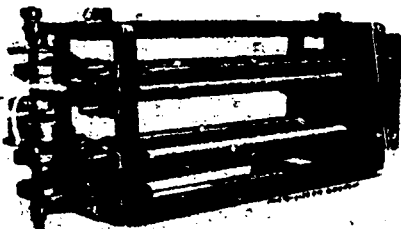
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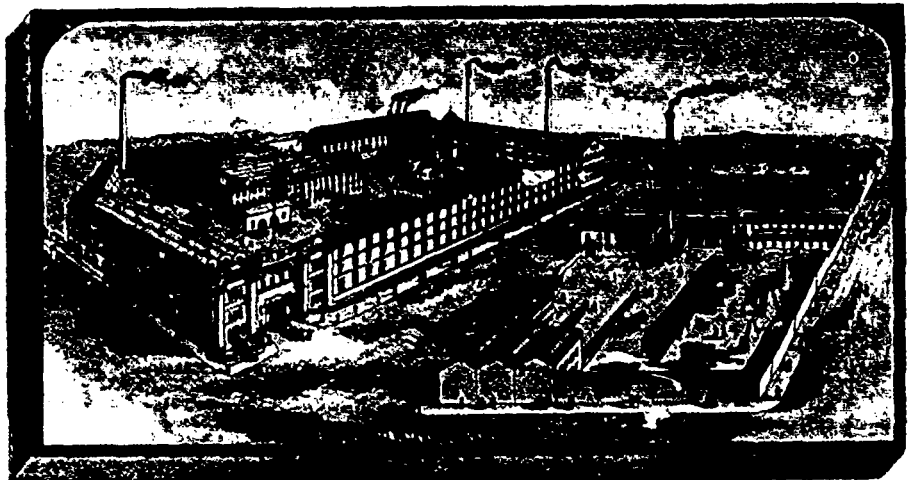
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