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# Canadian Journal of Fabrics

THE JOURNAL OF THE  
Textile Trades of Canada.

Vol. XIX.

TORONTO AND MONTREAL, JULY, 1902.

No. 7

## Canadian Journal of Fabrics

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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. Price, \$3.00.

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### THE METRIC SYSTEM AND THE TEXTILE TRADES.

The metric system of weights and measures was one of the many outcomes of the French revolution, that great upheaval which turned Europe topsy-turvy in so many different ways. At the close of the eighteenth century, there were, perhaps, a hundred different systems of weighing and measuring articles in France, each province and district having its own local customs. A commission of scientific men was appointed to frame a simple system which should be adopted by the whole country. The result was the

metric system, by which all measures were based on the decimal system of notation, in the first place, and in the second place all measures, whether of length, weight, area, volume or capacity, were related to each other. How simple this is can be appreciated by a study of the chart of the metric system, recently published by the proprietors of this Journal. The entire range of weights and measures is here set out on a single sheet, and the whole system made clear by including the derivation of the words used. This chart, which can be had at ten cents, should be in the possession of everyone connected with the textile trades and all other trades for that matter—not only because of the frequent and growing use of metric terms in the mill and dy-house, but as an object lesson demonstrating the superiority of the metric system for everyday use. We do not hesitate to say that half an hour's study by any person of average intelligence will enable him to understand the principles of the system, and when the reader goes back to his school-days and remembers the days of study required to master our own tables of weights and measures, he will appreciate what the metric system saves in time and study to any beginner. Indeed, it is estimated that to the average man in the average business of life and having an average amount of "figuring," the change from our complicated English system to the metric system would mean a saving of three or four years in actual time. In other words, the average man could have three or four years added to his life, or saved for other work. Take English weights as an example of the unnecessary complications of the system we labor under. We have a table of Avoirdupois weight for ordinary commerce, a table called Apothecaries' weight, used by druggists, and another called Troy weight, used for the weighing of precious metals, besides the weight for weighing precious stones. Now all these various purposes could be served by one simple table of a greater range, and the metric system provides it. It not only provides it, but by a table based on our decimal system of notation—that is ten measures of one denomination make one of the next higher; whereas in our English weights the numbers

or measures of one that make the next higher differ in almost the whole scale, and a weight of the same name will differ in the different tables—a complication for which there is no reason in the nature of things or in the requirements of science or trade.

During the hundred and odd years since the metric system was adopted in France, it has gradually been adopted by one country after another until it is now in use in 44 countries of the world, with an aggregate population of 485,000,000. Even Turkey, as backward in some respects as she is, has adopted it, and when Russia joins the metrical countries, as she is now preparing to do, it will leave only Great Britain and her colonies and the United States out of it. It is only a question of time when the Anglo-Saxon peoples will have to adopt it to save their trade with the rest of the world, so we may as well face the problem now as ten years hence; in fact the leading commercial men and manufacturers of both Great Britain and the United States have for some years been advocating the change, and every year, nay every week, shows the increasing urgency of this great step in advance. But the intimacy of the intercourse between the two English-speaking nations requires that they should change over at the same time. It is a change involving some temporary trouble and expense, but the fact that no appreciable portion of the people of any country that has adopted the metric system has ever desired to go back to their former cumbersome weights and measures, shows that the difficulty of making the change is as nothing compared with its benefits when accomplished. The advantages of the metric system in enabling one to calculate percentages so easily is already so much appreciated by English-speaking chemists and druggists, that many even in Canada and the United States have metric scales, as well as Apothecaries' in daily use side by side.

In the dye room the subject is of much interest owing to the prominence of German, French and Austrian manufactures in the chemical and dyestuff trades, and recently the question has become a live one in the yarn-spinning trades by the recommendations of a commission which was formed during the Paris Exhibition to frame a universal system of counting yarn. It is needless to say the commission recommended a universal count based on the metric system, and Prof. Roberts Beaumont, the well-known Yorkshire instructor in the technology of textile fabrics writes forcibly in support of the proposal. He says it is a fact, extraordinary as it may appear, that if a number of manufacturers from the border towns of Scotland, the West of England, the West Riding of Yorkshire and America were in conversation on certain technicalities of their trade, while speaking of the same subject, they would be using totally different terms, and these as confusing as the speech of Babel. The Scotchman in

counting his yarns would use the term "cut;" the West of England man "snap;" the Yorkshireman "skein," and the American, "run." In talking of "setting" or fineness of the fabric, the words "set," "dent," "reed," and "sley" would be used. Sometimes in the fabric there are compound threads of wool, worsted and mercerized cotton, and in that case three systems of counting yarns have to be encountered, the worsted by the number of yards per dram, the worsted by number of hanks of five hundred and sixty yards per pound, and the cotton by the number of hanks of eight hundred and forty yards per pound. The result is that several calculations must be made before the actual counts of this three-fold thread can be ascertained. Prof. Beaumont wonders that these unsatisfactory methods should have lasted so long and that the "American" should not only have practised them hitherto, but have added to their complexity by the coining of other words such as "runs" and "grains." The principals of the textile schools of the United States have approved the decision of the International Congress, referred to, which was "one universal system of counting yarns, the basis of which would be that a No. 1 yarn would be a length of one meter weighing one gramme; or, in other words a length of one kilometer (about 3,280 feet), weighing one kilogramme (about 2 1-5 pounds Avoirdupois)."

The difficulty in adopting these recommendations is that without the general adoption of the metric system for other trades, its application to yarns would be only a half measure, and therefore unsatisfactory. If the metric system were brought into use, a universal system of counting yarns would follow of itself.

This subject was quite recently brought before the Silk Association of Great Britain and Ireland, and an expert committee has made a report, the substance of which is as follows:

1. Count is the relationship of weight to measure. It always indicates a given length of thread in a given weight. Without this it has neither meaning or use.
2. A uniform international count is, therefore, impossible, until there is a uniform system of weights and measures.
3. The "metric" system of weights and measures is so perfect, and has been accepted by so many countries, and by many scientific societies in our own country, that, most probably, sooner or later, it will be adopted by the British Government.
4. Until it has been so adopted, little good can be obtained by seeking to introduce in this country an international system of yarn counts.
5. The Silk Association should, therefore, in the meantime, press upon Government to introduce, and after two years' notice to make compulsory, the metric system of weights and measures.

6. A perfect international system of yarn counts should conform to two essential conditions:

(a) It should be applicable to every kind of thread from the thickest yarn to the finest raw silk, whether single, twisted, knopped, looped, or eccentric, and should admit of no exceptions.

(b) It ought to show on the face of it the two factors out of which all count is compounded—namely, length relative to weight, these being the essential points required by spinners, merchants, and weavers in their various calculations.

7. The declarations of the Paris Conference do not conform to these conditions. The recommendation that raw and thrown silk should be exceptionally counted by the Italian skein of 450 metres is an unwise exception. It destroys the uniformity of an international count, and introduces a method of naming the count which differs from the metric system already accepted for all other classes of yarns. It would be quite as easy and convenient to name the count by the number of metres to the gramme, as by the number of grammes in 10,000 metres. The skein of 450 metres is purely experimental. It is only a test, made and then thrown aside, and might be retained as a sectional or local practice; but no silk is sold reeled in this manner, and it is an unsatisfactory system for an international count, which should be adapted to all classes of yarns. The Italian method has no recommendation, except that many people are at present using it; but this may be said of every count.

8. Presuming that the "metric" system of weights and measures were adopted, a perfect system of international counts could be formed by the observance of two principles:

(a) The count of a yarn should be determined and named by the number of metres contained in a gramme.

(b) This number should refer always to the completed thread, no matter of how many strands it may be formed.

9. The first principle (a) is resolution No. 2 of the Paris conference. They have not had the firmness to stand by it, but have admitted exceptions. It is adaptable to every thickness of yarn. The second principle (b) is absolutely necessary if the count is to cover every form of yarn. In no other way is it possible to express the count, that is, the length to the weight, in yarns which are composed of strands of different thickness—crepe yarn, loop yarn, knop yarn, eccentric and fancy twists, as well as single yarn. Thrown silk has always been counted in this method. An international count should cover every class of yarn.

10. Hanks or skeins under such a system might be reeled to whatever length suited each trade. Since the introduction and now extensive use of the "Grant" system of reeling, the length of the skein is of little

importance: the essential point is that the count clearly indicates the length relative to the weight.

11. It is unnecessary and impolitic to seek by any violent means to abolish the systems of counts or methods of reel which are now in use. So far as they serve local convenience, they will be, and ought to be, preserved. But dealers, throwsters, and spinners should be urged to adopt the general use of the international count in all marking of their goods, in addition to any other count which they consider necessary or convenient. The usefulness of a uniform standard count, adapted to every country and every class of yarn, and expressed in such a way as to facilitate and simplify all manufacturing calculations, would in time secure its general acceptance.

It will thus be seen that this committee, while criticizing some of the declarations of the Paris commission, and doubtful of the advantage of taking up the metric system and applying it to yarns only, recognize the advantage of the metric system for all purposes, and they see that a universal system of yarn counts would follow as a matter of course.

#### THE WOOLEN MANUFACTURERS.

It is evident that the woolen manufacturers of Canada can no longer look to the Dominion Government for the justice to which it was generally conceded they were entitled in the matter of duties under this tariff. We have shown on more than one occasion that the disabilities under which the Canadian woolen manufacturers labor since the adoption of the preferential tariff are peculiar to the trade and are not incident to any other considerable department of textile manufacturing, except in a lesser degree the cotton mills; nor is any other branch of home industry outside the textile trades affected in the special way we have before explained. It was thought by the great majority of the woolen mill owners after the explanations made at the last annual meeting of the Canadian Manufacturers' Association, that the Dominion Cabinet would act on the convictions they had formed on that occasion, and do justice to this wronged industry, but they appeared to have shifted these convictions out of fear that manufacturers in other branches of trade would, if such a concession were made to the woolen men, clamor for concessions in their interests.

Fortunately, the large orders placed by the Imperial Government with Canadian woolen mills for cloth for uniforms, hosiery and blankets in connection with the South African war, has kept a number of our mills busy for a long-time past, and the mills engaged on these large orders have been withdrawn from competition in the local trade, giving the other mills a chance to live on the normal demand of the Canadian trade. The development of mining, and the extension of settlement in the west and north of Canada in the

past two years, combined with the general prosperity of the country, are further factors which have helped to save the Canadian woolen mills from the ruin that seemed impending; and to these causes is due the fact that even yet the principal mills are fairly well off for orders.

The South African war is now over, however, and it is not likely that any considerable orders will henceforth come in a normal way from the Imperial Government. As to the continued prosperity of Canada, it would be rash to build upon the future. Of this we may be certain, that cycles of depressed trade will come sooner or later, and it is for the Canadian woolen manufacturer to calculate how he will meet this depression when it comes. For one thing, he should take stock of his plant and see what improvement he can make in his machinery. It is no more than the truth to say that at least some of the difficulties of a section of our mills are due to a false notion of economy in trying to go on with antiquated machinery. To compete with the textile manufacturers of Great Britain, Germany and France, we must adopt their improved methods and machinery. To buy second-hand machinery, which has been thrown out of English and American mills as useless, and then expect to compete with the products of these up-to-date foreigners, is scarcely less fatuous than to discard the spinning mule and go back to the hand spinning wheel, because a spinning wheel is cheaper. It is production and quality of work that counts in textile machinery, as in any other branch of manufacturing. Of course one must use judgment in buying new machinery; but antiquated carding, spinning and weaving equipment is at the bottom of the failure of more than one Canadian mill to keep up with the procession.

—It pays to learn as much as possible about the business with which you are connected. If you are a weaver, don't confine your attention to the operation of looms, if so you will never be more than a weaver. A man may work early and late and ever so hard and yet find time and opportunity for self improvement. How do you spend the hours between quitting work and bed-time?

—The Italian Government has brought in a bill to regulate the hours of labor for women and children, which, if it becomes law, as it probably will, will do away with night work in the factories. The effect will be that if the production of yarn is to be kept up to present figures, between 600,000 and 700,000 new spindles will have to be put in operation, to make up for the cutting off of night work. The weaving industry will be little affected, as night work in that department is necessarily defective in quality, and therefore not carried on.

—The United States census bureau has issued a preliminary report on the wool manufactures of that country, showing in 1900 a total of 1,414 factories, a decrease of 17 per cent. in ten years, but an increase of capital invested of 26 per cent. and of product 10 per cent. The average number of operatives employed is 100,108, drawing \$57,933,817 in wages. The miscellaneous expenses were \$17,329,932 and cost of materials used, \$181,150,660. These figures are exclusive of hosiery, knit goods and fur hats. The figures for Canada, taken a year later, we await with interest.

—Some of the mills are going back to the old plan of stopping work for breakfast. In the old days the mills started very early—as early in some cases as 4 a.m.—and the hands, after doing almost half a day's work, went home to breakfast. Now-a-days, when work does not start so early, in many cases the hands bring their breakfast and eat it as they have opportunity, but this diverts them from their work. In some of the mills, including a large one at Fall River, the machinery stops at 7.45 a.m. for fifteen minutes for breakfast, and so as to cause no decrease in running time, continues till fifteen minutes past 12 o'clock at noon.

—A visit of some sixty cotton manufacturers of New England to a large mill at Fall River was arranged last month by the General Electric Co., to demonstrate the superiority of the electric system of power transmission. Its advantages greatly impressed the visitors. The alternating current generator is engine and dynamo combined, and the electricity is conveyed by wires to the various rooms of the mill, where motors, some of 200 horse-power and some smaller, are suspended from the ceilings, and from these the machinery is operated. The mill has no stack or chimney, the smoke being sifted through consumers. Flues for draft extend to the roof of the four-storied main mill. It is probable electric power for textile mills will come into general use before long.

—A gentleman prominently connected with textile manufacturing recently remarked: "The textile manufacturers of the country are lacking in but one essential need and that is the supply of skilled labor. If our mills are to compete with those of the world, and such is certain to be the case, they must have a class of help with that knowledge of the finer points of textile manufacturing that can be obtained in but one way, namely, textile education." The remark was made with reference to the United States, but it will apply equally to Canada. How to get such an education is the question. There are textile schools in some countries, but comparatively few workers can afford time or money to attend them. The correspondence schools

help to fill the want, and where actual attendance cannot be given, this is the next best thing.

—It is stated on good authority that a syndicate of New York and Chicago men, who are also interested in Southern cotton plantations, have purchased three of the largest cotton mills in Lancashire, paying therefor between \$15,000,000 and \$20,000,000. The mills concerned are those of the Doylesden Spinning Mills Company, the Oldham Cotton Mills Corporation, Limited, and the Bolton Cotton Mills Company, Limited. All are situated in the immediate neighborhood of Manchester, and the syndicate was influenced by the facilities the Manchester ship canal provides for landing the raw material practically at their doors. These mills now employ about 2,000 operatives. Up-to-date machinery will be installed. New automatic looms are to take the place of the old ones now in use. American control of Lancashire mills is a new departure which will be watched with interest.

—The strike in the woolen mills operated by the American Woolen Co. is about over, and most of the looms are again in operation, without the company having had to give way to the strikers. A somewhat important decision has been given by the courts in this connection, in complaints made by the mills against members of the Weavers' Union, formerly employees of the company. An injunction has been issued in two States restraining the defendants from patrolling the streets in front of or near the complainant's mills, or alongside the complainant's employees as they go to or from their work, or interfering with them in any way, by boycott or otherwise. The company has made a new schedule of wages under which a weaver making \$34 in four consecutive weeks is given a premium of 5 per cent., and for each additional \$1 of wages earned 1 per cent. more is added up to \$40. This increase continues for those earning up to \$56. Both one loom and two loom operatives benefit by the arrangement.

## Foreign Textile Centres

Bradford.—Business generally is slow in this market, but topmakers are firm, and so far as the finest classes of material are concerned there is not the slightest indication of a giving way in values. The opinion prevails among those who handle raw material that towards the end of the present year there will be shortage of merino descriptions, and they are not willing to book further forward at the rates they are now able to command. Spinners, however, do not find that their customers are willingly paying the advance necessary, and they are not speculating. The finest classes of crossbreds maintain their position, but home-grown wool is slow. Mohair and

alpaca firm. The yarn department is not getting much new business, but machinery is employed on old orders.

Belfast.—This linen market is very steady, with a good current of business in the low end, and prices are firm. Russian flax is in very limited supply, and top prices are held for, there being no prospect of cheaper raw material for months to come. The spinning branch is hardly so brisk, but orders for tows and coarse line warps are being placed to a substantial amount. There is a more hopeful tone in line wefts, but little actual change. Prices are quite steady all over. The manufacturing end is steady, with considerable demand for cheap grades. White goods for the home market are in moderate request.

Dundee.—Advices from Dundee report the linen market as decidedly strong, raw material scarce and prices stiff.

Kidderminster.—Most carpet manufacturers are fairly well employed in finishing off old orders and making the special odd orders that come in from day to day. The postponement of the Coronation has had a depressing effect, and although machinery has been kept running the output has been limited and the demand weak. Very few houses have shown any inclination to negotiate, so great has been the dislocation of business. The yarn trade is in a dull, unprofitable state. Rather more is doing for the outside markets, especially the Continent, but it cannot be said that there is any all-round improvement in demand or price. Prices of wools remain unchanged, though the tendency is in an hardening direction. The new clip has come into the market. It is not altogether satisfactory, but this is mainly due to the continued wet weather. Many of the unwashed fleeces are unduly weighted with moisture and dirt, and buyers will no doubt find a considerable shrinkage before the wool passes into the spinning mill.

Leeds.—Unseasonable weather has had an injurious effect upon the home trade, repeats being comparatively trifling. The stimulus derived from Coronation orders is over, and, although the summer trade does not as a rule close before the end of July, manufacturers are already turning their attention to goods for winter and spring requirements, and there is for the most part a fairly good prospect. The winter trade has lost much of its distinctive character owing to lighter fabrics being in vogue, but the demand for heavier goods is still large, and old-established worsted houses are already well booked forward, customers being generally willing to concede the moderate advance involved by the rise in wool. Fancy worsteds in neat designs and close cut serges are in active request, and it is apparent that rainproof worsteds for overcoats are going to hold their place in the winter trade. The drought in Australia is checking the demand for piece-goods for that market, but a fairly satisfactory business is being done, and Canada is still a good customer. Although wool may not have reached its maximum value, there is no disposition to speculate in the piece market, in which there is even a tendency to operate for a decline. In low woollens there is more business for the home market, especially in venetians, twills, meltons, and cheap serges. For Zibelines used for ladies' costumes there is a brisk demand, and some of the mills are working overtime. In the wholesale clothing trade producers are preparing for winter goods, rain coats, and similar garments.

Leicester.—In the yarn market the large contracts in hand keep spinners fully engaged, while stocks are small. The hosiery industry is well up to the average in the production of heavy fabrics and specialties, but the weather has seriously checked deliveries of fine light goods.



Nottingham.—There has been a falling off in the general demand for lace goods, the pressure even for the more fashionable varieties of laces having abated. In some instances orders have been countermanded. The prolonged spell of bad weather has materially affected the demand, shopkeepers in many instances having found it unnecessary to replenish their stocks. Some of the makers of the best Valenciennes goods continue to be well employed, but orders can now be executed with very little delay. The duchesse, Malines, Maltese and torchon varieties are selling, and Cluny laces are also in some request. A considerable portion of the goods are wanted in one or other of the fashionable tints. Moderate shipping orders for common laces are in course of execution. Crochet laces do not sell freely. The making-up branch is fairly active, although some houses complain of a falling-off in this department. An extensive business is being done in lace curtains. Plain net machinery is pretty well engaged, and prices generally are steady.

South of Scotland.—Trade continues good, manufacturers reporting that machinery is fully going in every department. The carding and spinning departments generally are working overtime. Manufacturers are fairly well off for work for forward delivery. Next season is also promising well, as first pattern orders have been placed by London and other buyers in considerable quantity. There has not been much doing in wool, but it is expected a large business will be done in July, as stocks are low, and the wools then offering at the London sales will be suitable for Scotch requirements.

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## Personal

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R. and W. McIntyre, of Brockville, have joined the staff of the Preston Glove Co.

Alexander McKellar, representative of the Toronto Carpet Co. in Western Ontario since 1895 till last November, when he retired on account of ill health, is dead.

Harry Clemens, who has been in the dry goods business at New Hamburg, has sold out to accept a position with the Berlin Whitewear Co., and will travel between Montreal and Halifax.

John Bowstead, who has been in the employ of the Hamilton Cotton Company for 14 years, was presented by the management and workmen with a beautiful cabinet of silver on the occasion of his marriage.

John R. McGregor, son of Patrick McGregor, of Carleton Place, who removed some five years ago to Broad Brook, Conn., where he holds a position in a 22 set woolen mill as first assistant to the boss dyer, has been visiting his old home on his wedding trip.

The death is announced of Adam Cranston, an old resident of Galt. He was formerly in the woolen business, having been employed in the office of Thompson's mills, and afterwards managed a woolen mill at Plattsville for Adam Warnock.

Jas. Turner, a well-known millinery merchant of Winnipeg, is dead. He was born in London, Eng., in 1830, came to this continent in the sixties, spent ten years in Philadelphia in the fancy goods trade, and in 1879 went to Winnipeg, where soon after he started as a direct importer and dealer in fancy goods and millinery.

Thos. Ainley, who has been overseer of the carding department of the Anchor Knitting Mill, Almonte, for some months,

has secured a similar position in the Hawthorne Mill at Carleton Place. Before leaving he was presented with an address and a handsome gold Masonic ring from the men in his room, with whom he was very popular. He is succeeded by his nephew, Jas. Ainley, of Haverhill, Mass.

The death is announced of William Clark, the well known thread manufacturer of Newark, N.J., and Langs, Scotland, in the latter of which he has resided since retiring from active business five years ago. He was born at Paisley, and commenced business in a small way with his brother at Newark, where they built up great thread works, with a branch at Paisley. They were one of the largest thread manufacturing firms in the world.

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## THE WOOL MARKET.

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The fourth series of the 1902 wool sales opened in London on July 8th, with a good attendance. The offerings numbered 12,693 bales, chiefly cross-breds. Competition was spirited, merinos and small cross-breds being in demand. The home trade secured a good supply of cross-breds. Tasmania greasy merinos sold freely. Scoureds were firm. Cape and Natal was unchanged to 5 per cent. higher owing to small supply. Coarse grades in some cases showed small declines. The following are the opening prices:—N. S. Wales, scoured, 6d. to 1s. 6d.; greasy, 4½d. to 9½d.; Queensland, scoured, 10d. to 1s. 5d.; greasy, 9½d.; Victoria, scoured, 7½d. to 1s. 5½d.; greasy, 3½d. to 11d.; S. Australia, greasy, 5d. to 11½d.; Tasmania, greasy, 4d. to 1s. 1d.; New Zealand, scoured, 3¾d. to 1s. 4½d.; greasy, 4d. to 10½d.; Cape of Good Hope and Natal, scoured, 10d. to 1s. 2d., greasy, 6d. to 6¾d. On the 9th the offerings comprised a superior selection and there was spirited competition. As a rule prices were firmer, in some cases showing a considerable advance. On the 10th the offerings were again larger, including a good selection of scoured merinos, which sold quickly. Cross-breds formed the bulk of the offerings. N. S. Wales clothing and combings were in active request and realized extreme rates. Fine grades were firm, low grades showed weakness. Cape and Natal were firm. The range of prices was greater than on the opening day. The sale is still in progress.

In Toronto the offerings of new clip wool are more liberal. The demand is slow as there is no export inquiry. The market is dull, with prices unchanged. Fleece—The receipts are liberal, but the demand, in the absence of inquiry for shipment to the American markets, is slow. Local dealers are offering 12c. for washed and 7c. for unwashed. Pulled Wools—The demand from the Canadian mills is slow, and it is likely to be small for some time, owing to the fact that country mills will be getting supplies in their own sections of the country. Prices are steady at 14c. to 15c. for supers, and extras are quoted at 18c. to 19c.

In the Montreal market there is very little change to note. Prices for all merino wool are firm at last quotations. Manufacturers are holding off buying until after the London wool sales, as there are only about 100,000 bales merino to offer, the balance being cross-breds.

The Winnipeg report indicates receipts of Manitoba wool light with market steady at 6 to 6½c. for unwashed.

In the United States markets the tone is strong, and the tendency is to advance. A report from Boston says the inquiry has been for almost everything, from the finest territory down to the coarsest. The demand has been especially pronounced for fine territories, fine Australian, scoured wools, B supers and medium fleeces and territories. The shrewdest buyers have paid 2c. to 3c. per scoured pound more than they paid a month or two ago. In the west the situation is growing stronger, and in some places owners of wools have advanced quotations to such a point as to prohibit business. Montana is a little late in opening, although enough has been done to indicate that the market will become established on a relatively high basis. Receipts in Boston show a considerable increase over last year. Quotations are: Texas, 16 to 20c.; California, 10 to 20c.; Oregon, 14 to 17c.; territory, 13 to 18c.; pulled wools, 20 to 30c.; scoured wools, 25 to 55c.; miscellaneous, 9 to 21c. In New York there is fair inquiry and evidence of strength. In Philadelphia prices are firm with a tendency to advance on increased demands. Carpet wools are not in demand at any of the points. Speaking of the movement in the west, the Wool and Cotton Reporter says: "Practically all the wool clip of Washington has been sold in as short a time as ever recorded and at prices one cent a pound higher than last year. No wool is to be bought in the Walla Walla country and but 500,000 pounds remain in the Yakima and Kittitas Valley. The wools which remain are known as scouring grades."

Wm. Graham, wool merchant, Toronto, has returned from extended tours through Ontario and Quebec, and gave a representative of The Journal of Fabrics some interesting information on the wool trade. The clip of Ontario of this season while of good average quality, will be far below that of recent years in quantity. This falling off is due partly to the continued low price of mutton as compared with other meats; and partly to the long period of depression in the wool market. A great many sheep and lambs have been killed off in the past three years, and notably last year, and farmers have gone into other stock as being more profitable. It will take three or four years to recover lost ground, especially in Ontario, but the scarcity of sheep is one of the elements in an improved outlook for the wool trade. Another circumstance pointing to firmer prices for wool is that the surplus stocks in the hands of farmers and local dealers which were assumed to be non-existent during the period of lowest prices, but which always materialized in such volume as to swamp the market whenever there was a sign of a rising in price, have now been really cleared away, and there is now in Ontario not much more than the current season's clip to deal with.

Some U. S. buyers have been going through Ontario and Quebec, and one of them has done such reckless buying as to demoralize the market for conservative operations.

The Mormon settlers at Raymond, in the North-West, have gone into wool raising quite extensively, and one of them states that they will have over a million pounds to sell this year. These men were successful sheep breeders in Utah, and on coming to Canada brought their flocks of territory sheep with them.

#### LITERARY NOTES.

S. Charles Phillips, well-known in British trade journalism as the publisher of successful journals in the paper, pulp and stationery trades has entered the textile field with a monthly called the Textile Journal, the subscription to which is 6s. 6d. per year. The first numbers to hand are varied in contents, richly illustrated and instructive. Published at 47 Cannon St., London, Eng.

The publishers of the Textile Record, 425 Walnut street, Philadelphia, have issued the 1902 edition of the "American Directory of the Hosiery and Knit Goods Manufacturers." It covers Canada and Mexico as well as the U.S., and contains besides the capacity and products, etc., of each mill, several useful tables for yarn and knit goods manufacturers, and a list of the jobbers in knit goods. Price, \$2; 284 pages; size, 4 1/2 x 6 1/2.

We have to acknowledge the receipt of a copy of the Directory of the Textile Industries of the United States and Canada, and the Yarn Trade Index, for 1902, published by Guild & Lord, publishers of The Textile World, Boston, Mass. In addition to lists of all engaged in textile manufacturing and allied trades, the directory contains maps showing the location of textile towns. This is a useful feature which will be much appreciated. The Canadian features of the work are new. The directory is supplied in two editions, traveller's at \$2, and office at \$2.50.

—The latest cotton quotations from New York are: Spot closed quiet; middling Uplands, 9 1/4c.; middling Gulf, 9 1/2c.

—The cotton operatives in Lancashire are reported to be very uneasy over the introduction of American labor-saving machinery into the cotton industry.

—P. H. Burton, president of the Merchants' Dyeing and Finishing Co., Toronto, left on July 12th on his 134th trip across the Atlantic, which he has been crossing for 36 years in the interests of the dry goods trade.

—Although the season is now somewhat advanced dry goods men look forward to a good demand for summer lines, and the present warm weather is rapidly increasing the trade in these goods.

—Fall goods are being largely bought by the retail trade in anticipation of a large demand. The crop prospects are so good that everyone in the trade feels sure of a good fall demand and buying is gauged to suit this opinion.

—Geo. Reid, of Geo. Reid & Co., Toronto, dealers in textile machinery and mill supplies, has returned from his trip to England. Mr. Reid has been appointed Canadian agent for some of the best makers of woolen and worsted machinery in the Old Country.

—The vote on the by-law to grant a bonus of \$20,000 to the St. Johns hat factory, recently defeated, is to be taken again at Brockville on July 14th. The only change in the terms is that the company now guarantee to remain 20 years instead of 10 years.

—L. Bredannaz, manager of the Toronto Woolen Machinery Co., Duke Street, Toronto, announces that he has purchased the business from his present partners and is forming a new company to carry on and extend the business of manufacturing and dealing in textile machinery.

—The J. Stevens Arms and Tool Co., Chicopee Falls, Mass., makers of the well-known Stevens rifles and shot guns, announce a special rifle shooting contest open to competitors in Canada, \$1,000 in prizes being given; the competition to close 31st October. Full particulars can be had on writing the company.

—In a fire which destroyed the storage warehouse of P. McIntosh & Sons, Toronto, on July 10, a number of firms lost quantities of wool stored therein. The following are the losses: Calvert & Dwyer Co., \$3,500; Wilson Bros., \$16,000; Hamilton & Co., \$4,000. They were all insured. There was also 25 tons of hinder twine burned belonging to the Ontario Binder Twine Co., valued at about \$10,000; insured for \$8,000. The loss of this twine may effect the local market as it cannot be replaced in time for the harvest on account of the want of raw material.

# THE CANADIAN JOURNAL OF FABRICS.

This year is the centenary of trousers in England.

W. J. Webster has commenced the erection of his woolen mill building at Edmonton, Alberta.

An increase in pay has been given to the employees of the carding and spinning department of the Elmsdale mills at Almonte.

The polka dot is popular on everything from neckwear to stockings. Sunshades also testify to the hold it has upon the fashionable mind.

Harris & Co., Rockwood, Ont., are enlarging their woolen mill by a new weaving room, new boiler room and 120 foot chimney. Some new machinery will also be installed.

A contract for 10,500 yards of white duck, for army purposes, has just been let to a Baltimore man for 22.40 cents per yard. The quality called for is No. 6, 31 inches wide.

The New York Silk Waist Mfg. Co., of Montreal, have provided a table in their factory where the employees can have their mid-day meal in comfort, and also supply tea, etc.

Nearly \$16,000,000 worth of shirts, cuffs and collars were manufactured in the United States during the census year 1900. There were 57 establishments reported, only one large one being outside the state of New York.

Canadian tanners have been favored with some large orders for sole and upper leathers from British houses. It is reported that the leather trade in the Dominion has not been so prosperous as it is now for the last ten years.

The Valley woolen mills at Southampton, N.S., have been idle a good deal this season as farmers have been slow about bringing in their wool. The proprietors have the advantage of the opportunity to make some additions to their machinery.

The Colonial Weaving Co., Toronto, has been incorporated with a capital of \$60,000, to manufacture silk, cotton, wool, paper, etc. The provisional directors include W. C. McBurney, Toronto; F. J. Jameson and R. M. Glover, Peterboro.

Some of the boys in the spinning department of the Anchor Knitting Co.'s mill at Almonte, recently made a demand for increased pay. The advance was granted, but the boys went on strike for half a day, after getting what they asked for, before returning to work.

Canadian mills, says an exchange, have advanced the prices of underwear from 10 to 12 per cent. The effect will not be immediately felt, as wholesale houses have fair stocks for fall, but after these are exhausted it will be impossible to fill orders at the old prices. Hosiery is also advancing.

Cotton cultivation has been almost abandoned in the British West Indies during the last thirty years. The only locality where it has survived is the small island of Carriacou, connected with the colony of Grenada. Experiments in growing cotton are being carried on at St. Lucia, Montserrat and Antigua.

A style of woolen dress fabric now much worn in England is one showing a speckled or mottled effect. One of the best plans of producing this is to print the wool in the form of slubbing before it is spun into yarn, and then to weave this yarn with white yarn into the cloth which is then finished in the usual way.

In a few weeks more the wool clip of 1902 will be practically in the hands of the trade, or will have passed into the hands of manufacturers. Buyers declare that they have never seen each section so completely cleaned up. The wool clip of Oregon and Washington is estimated at 20,000,000 pounds, and is now being rapidly sold at fair prices.

The first worsted combing machine was started in Philadelphia in 1800. In 1870 Pennsylvania ranked second in the manufacture of worsted goods, making 35.7 per cent. of the total value of the worsted product of the United States. In 1900 Pennsylvania was in third place, making 18.4 per cent.

The St. John cotton mill is now turning out about 40,000 pounds per week of domets, flannels, denims, and other coarse cotton goods, which find a ready market. The mill is being improved by putting in a lot of Platt Brothers' machinery, of Oldham, Eng., and putting in good order the machinery formerly in use. New mappers have been installed and about 40,000 spindles are now in operation. It is expected that when completed 60,000 spindles will be operated.

The Hudson Bay Knitting Company have added to their already numerous lines, according to the Winnipeg Commercial, a new kind of leather for gloves and mitts. It is a scorch and waterproof cordovan made from the hide of the western broncho. Its toughness and durability are said to be wonderful. By actual experiment the leather was boiled for two hours and then thrown on top of the stove to dry out. The only perceptible change in the stock was a loss of color. In color this stock is a handsome pale gray.

In the Southern States manufacturers are paying from 1/4 to 1/2 cent more for cotton than the quoted spot prices. Even then there is difficulty in securing suitable grades. R. G. Dun & Co. report a decrease of ten per cent. in the acreage in the Gulf states and a decrease of about five per cent. in the Atlantic Coast states. In Texas there has been a slight increase over last year's acreage and the crop returns are promising. However, under present conditions there is little prospect of weakening in the cotton goods market during the present season.

## WIDTH AND VELOCITY OF BELTING.

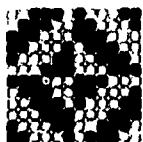
Horse Power.	Velocity in feet per minute.	Diameter of small pulley in inches.	Belt pull per inch width in pounds.	Thickness	Width of Belt.				
					In use.	Webber's rule.	Nagle's rule.	Recaux's rule.	Handy rule.
375	5,600	60	98	Double	24	22	34	31 1/2	27
250	3,080	84	58	4-ply	48	50	28	28	23
220	2,451	42	135	Single	22	98	31	84	70
175	3,179	72	93	Double	19 1/2	15 1/2	25	26	22
175	3,620	115 1/2	55	Double	29	15	22	23	20
130	2,117	70	113	Double	18	18	22	29	24 1/2
125	3,400	84	82	Double	14 1/2	8	17	17	14 1/2
90	2,860	60	87	Double	12	10	15	15	12 1/2
77	2,268	60	77	Double	14 1/2	12	12	16	13 1/2
45	2,000	48	37	Single	20	21	15	21	18
40	2,111	72	24	Single	20	21	15	21	18
43	1,800	60	44	Single	18	20	14	23	19
41	1,809	60	42	Single	17 1/2	12	16	21	18
40	2,000	72	37	Single	8	14	13	19	16
18	850	22	116	Double	6	10	8	10	8 1/2
8	942	30	40	Single	7	12	8	8	7

The average breaking strain of a leather belt is 3,200 lbs. per square inch of cross section.

A very good quality of leather belt will sustain a little more than this. In use on pulleys, belts should not be subjected to a greater strain than 1-11 of their tensile strength, or 260 lbs. per square inch of cross section. This will be 55 lbs. average strain for every inch in width of single belt 3/16 of an inch thick.

# Textile Design

## WORSTED SUITING.



Complete Weave  
12x12.

Warp:—5,184 ends, all 2/50s worsted, 12-harness straight draw.

Reed:—13½×6.

Dress:—

2 ends, black	= 2 ends,
4 ends, olive	= 4 ends,
1 end, brown	1 end.
3 ends, black	} × 23 184 ends
4 ends, olive	
1 end, black	
1 end, black	
1 end, black	
	= 1 end

Repeat of pattern: 192 ends.

Filling:—73 picks per inch, use the same counts, colors and arrangement as used for warp.

Finish:—Worsted finish: 56 inches wide.

## WOOLEN SUITING.



Complete Weave  
Repeat 16x8.

Warp:—8,192 ends, 16-harness straight draw, all 2/52s worsted.

Reed:—16×8 = 64 inches wide in loom.

Dress:—

2 ends, red orange	= 2 ends,
6 ends, light drab, No. 1 shade	= 6 ends,
8 ends, light drab, No. 2 shade	= 8 ends,
2 ends, sky blue	= 2 ends,
6 ends, light drab, No. 1 shade	= 6 ends,
8 ends, light drab, No. 2 shade	} × 14 = 224 ends,
8 ends, light drab, No. 1 shade	
8 ends, light drab, No. 2 shade	
8 ends, light drab, No. 1 shade	
8 ends, light drab, No. 2 shade	
	= 8 ends,

Repeat of pattern: 256 ends.

Filling:—73 picks per inch, all 2/52s worsted, arranged thus:

1 pick, red orange	= 1 pick,
3 picks, light drab, No. 1 shade	= 3 picks,
4 picks, light drab, No. 2 shade	= 4 picks,
1 pick, sky blue	= 1 pick,
3 picks, light drab, No. 1 shade	= 3 picks,
4 picks, light drab, No. 2 shade	} × 14 = 112 picks,
4 picks, light drab, No. 1 shade	
4 picks, light drab, No. 2 shade	
4 picks, light drab, No. 2 shade	
	= 4 picks.

Repeat of pattern: 128 picks.

Finish:—Worsted finish: 56 inches wide

## THE DEVELOPMENT OF THE POWER LOOM.

During the second year of the 20th century, as we take our stand amid the noise and bustle of the weave room in a woolen mill, do we ever think of the time when no such thing was known or thought of as a power loom? We watch the shuttles flying backwards and forwards through the warp threads, driven by the pickers of a Knowles, a Crompton, or a Dobercross loom; we watch the ever lessening size of the warp-beam delivering the warp, and the ever increasing bulk of the manufactured cloth that winds itself round the receiving beam at the front of the loom, and it is difficult to realize the amount of labor which our ancestors had to expend in producing a yard or two of cloth.

The earliest we hear of power-loom weaving was in 1678, the invention being that of a Frenchman, named, I think,

de Genne. It was not a success. The first real step towards the improvement of the loom, and which increased its productive property, was the invention of John Kay, who devised the fly shuttle. The next real inventors were two brothers named Barber. They made a power loom with a main shaft running from side to side, and carrying tappets for driving the picking arms. Dr. Cartwright, however, was the first who solved the problem of automatic weaving. This was in 1775. Cartwright was at Matlock, when the idea was first suggested to him by a number of manufacturers. The invention of spinning machinery had resulted in the production of such an immense quantity of yarn, that it was impossible to find a sufficient number of weavers. Production from the looms was so slow that it required a very large number of looms to balance the output from the mules. The first loom devised by Cartwright was a complete failure. He had never seen a loom, nor did he know anything of its construction. The warp in his first loom was fixed perpendicularly and according to his own statement "the reed fell with a force of 50." The loom required the strength of two powerful men to work it at a slow rate and only for a short time at that. In 1780, after seeing hand-loom weavers at work, he took out patents for his second loom, which was a masterpiece of ingenuity and contained the principles of mechanism which exist in the modern tappet loom. In addition to possessing the motions of shedding, picking, warp let-off, and take-up, there were contrivances for stopping the loom when the filling thread failed, and subsequently he added a warp stop motion and automatic temple. The system of tappets as devised by him for weaving a plain cloth, though rude in construction, is exactly the same as that which obtains in the plain or calico loom to-day, and it is obvious that this principle of weaving has been derived from the treadle loom; in the power loom there are treadles and top levers just as in the hand loom there were similar sets of treadles.

A rough outline of the simple tappet loom as used at the present day for plain weaving, may be of interest to some, as it is just an improved form of the loom invented by Cartwright so many years ago. The tappet loom is the simplest kind of power loom. It is used in every branch of weaving for the elementary classes of goods. It is one of the best and steadiest, as well as simplest methods of shedding the warp, indeed there is no system more steady and certain. For this reason all kinds of yarn can be woven in the tappet loom. In the woolen trade, the loom is chiefly used in the production of heavy goods, such as kerseys and beavers; in the worsted trade it is mainly used for coatings, serges and dress materials. If it is not intended to produce cloth composed of fancy weaves or of designs occupying more than 10 shafts, probably no loom is more suitable than this. It requires less fixing, and does not easily get out of action. The principal parts are, first, the tappets fixed on the tappet shaft. These receive motion from the main shaft of the loom, which drives the low shaft carrying the cams for the picking motion, and an additional loose shaft on which the tappets are fixed. It follows that the speed of the tappet shaft must be varied according to the number of tappets it carries. The treadles are operated upon by the tappets, and are connected by the streamer rods to the jack levers. These are fastened on to a square or rocking shaft which carries the half-moon levers, and these are secured to the top of the shafts. The loom is open-shed in principle, because the tappets will keep a shaft or shafts up or down for several picks in succession. In some tappet looms the shafts are only lifted positively, the tappet being the lifter and not the depressor, but being shaped to allow the tappets to be drawn down by

other mechanism, when not lifting. In other looms again, the shafts are lifted and depressed by positive motion. In the former looms there are three ways of depressing the shafts. 1st. By springs or weights—a very unsatisfactory method. 2nd. By means of a simple lever, the position of the fulcrum being changed according to the relative amount of work each end of the lever has to do. 3rd. By means of a patent lever and a spring. Space will not permit of me going further into details, but what I have said will probably prove of interest to some, who have not thought much about the evolution of the power loom.

Compare the timing of the motions in the power loom with those of the hand loom. In the power loom the motions are determined by the position of the crank shaft. 1st. The shed begins to form as the crank is receding from the piece. 2nd. The loom picks as the crank reaches the bottom position. 3rd. The filling is driven home as the crank approaches the cloth. 4th. The piece is set up and the warp let off as the crank points directly towards the cloth, or just as the filling is beaten home. The shuttle boxes should either operate with the shedding or just immediately behind it in time. In the hand loom the shed should be formed while the going part touches the cloth; as it reaches the back position the picking should take place and the setting up occur as the filling is being driven home.—L. R. B. in Wool and Cotton Reporter.

### AN ENGINEERING FEAT IN A SPINNING MILL.

The Yankees claim to be bosses of creation in the smart execution of work, says the Kidderminster Shuttle, but it would take them all their time to beat what was accomplished during the Easter holidays at the Castle Spinning Mills, belonging to the present high sheriff of Worcestershire. These are days when spinners and manufacturers find it necessary to have machinery combining the very latest improvements with the greatest economy in working to enable them to successfully compete in the markets of the world. The Castle Spinning Mills were erected in 1878. During the 24 years great engineering improvements have been made, and as increased power was needed Mr. Broome some time ago decided to put in new boilers and engines. It was at first intended to complete the work within ten days, and this would have been done but for the strike which broke out among the bricklayers. They were called together and the importance of completing the work at the mills explained to them. Mutual concessions were made and they resumed work. There was, however, a loss of two days. The machinery ceased running the night before Good Friday, and was restarted on Wednesday week. During that interval three Galloway boilers were removed and replaced by two huge steel boilers, declared to be the largest in the Midlands, the old mechanical stokers were replaced by new ones of the latest type, the economizers taken out and reconstructed to suit the new boilers, the auxiliary steam pumps and fire pumps replaced by new and larger ones, thousands of yards of new steam and water pipes of various sizes, for various purposes, fitted up, and the motive power for the whole mill renewed, the engine, which had done duty for 24 years, having been replaced by a more powerful one on a new bed and framework.

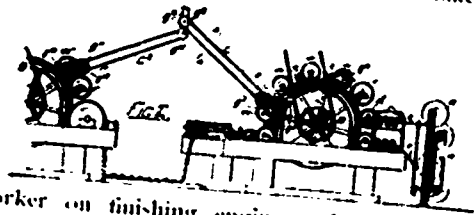
### A CHANCE FOR INVENTORS.

The numerous accidents to workmen in establishments where belts are used has recently brought about the stringent application of a French law, forbidding the removing or replacing of a belt by hand while the machinery is in motion.

In order to obviate the waste of time consequent upon the stopping of the machinery, an association of French manufacturers has announced an open international competition for the best fixed belt mounter. The invention should be designed for simple and not for conical pulleys, and must comply with the following conditions: It must be simple, strong and occupy little space, easy to fix and use, not dangerous in working, convenient for any speed, width or position of belt, able to throw the belt off and on, and sufficiently low in price to allow of its wide use. Competitors are invited to send a full description of their invention, accompanied, if possible, by a model or at least by satisfactory illustrations, to the president de l'Association des Industries de France contre les Accidents du Travail, No. 3 rue Lutèce, Paris, prior to October 1, 1902. This information may be of interest to Canadian inventors.

### THE PERFECT WASTE END SAVER.

Though there have been many so-called waste-end savers used by woolen mills throughout Canada, none of them have been a complete success, and the summit of perfection was never reached till the Perfect Waste-End Saver came into the market—perfect not only in name and working, but also in the simplicity of its mechanism. The principle is right, as the waste never comes to the front of the finisher. By means of card-clothing the waste end is taken from the



first worker on finishing engine, and delivered to the last worker on second scribbler. The machine is durability itself. It is being used in many mills throughout England and the United States, notably the mills of the American Woolen Co., where in one of their mills (the Assabet Mill at Maynard), there will soon be one hundred machines in operation. In Canada the Excelsior Woolen Mills have discarded the old forced draught machine for this new one.

### CEMENT FOR CLOTH ON METAL.

An exchange gives the following recipe: A new cement for fastening cloth to metal is compounded by soaking 12 pounds of hide glue in cold water until swelled. Then one-half of a gallon of crude turpentine, one-half of a gallon of pine tar, and 8 pounds of resin are taken, placed in an earthen vessel and heated over a slow fire until thoroughly melted and run together. The glue is then placed in a large pot over a fire sufficient to boil water, and boiling water added until the glue is thoroughly melted. The mixture of turpentine, tar and resin is gradually added to the glue and steadily stirred until thoroughly mixed. The cement can then be removed from the fire. It will congeal in about twelve hours, when it can be cut into cakes or slices convenient for handling. In using this cement for securing canvas or like material to pulleys, boiling water is first added to the cement until it is about the consistency of milk; it is then applied to the pulley, which should be previously cleaned with sal soda or a like substance. The pulley is then allowed to dry. Additional cement should be placed in the pot until the cement is of the consistency of thick molasses, when it is applied to the canvas as it is secured to the previously prepared pulley.

**CONTRACTION OF COTTON.**

Strong alkaline lyes produce in cotton threads a contraction amounting to about one-quarter of their length, but this can be prevented by stretching the cotton and keeping it stretched during the mercerization and until the lye has been washed out. The process about to be described, however, reduces the contraction to a negligible quantity. The cotton is placed in caustic potash lye at the ordinary temperature, and after having been dried at a low temperature, is rinsed in a lukewarm soap bath. The details for cotton yarn are as follows: The cotton is first soaked with warm water and then centrifuged. The object of this preliminary treatment is to enable the lye to penetrate the cotton quickly and uniformly. The cotton is next worked from 15 to 30 minutes in cold potash lye of 35 deg. B., and then centrifuged and dried at a temperature of 35 deg. C. It is then rinsed in the warm soap bath. The contraction after this treatment is, for big counts, about 2 per cent. of the length, but may reach 3¼ per cent. with the very finest yarns. Another important point is that the yarn, as it requires no stretching like that mercerized with caustic soda, is not subjected to the weakening action of that stretching as that mercerized with soda is, and is consequently far stronger and more durable. The new process also gives a very high lustre, very different from the parchment-like appearance of yarn mercerized with caustic soda while stretched.—S. Eisensten in *Farber und Wascher*.

**GOVERNMENT CONTRACTS FOR CLOTHING.**

The following bids for clothing for the U.S. army submitted to the quartermaster's office at Boston, will doubtless be of interest to the trade: 50,000 pairs of wool drawers, from 59¾ cents to 65 cents per pair; 50,000 cotton undershirts, 22.21 cents each; 50,000 heavy wool undershirts with collarettes, from 58½ cents to 65 cents each; 50,000 light wool undershirts, with collarettes, 40 cents each. At Philadelphia the following bids were received: 100,000 pairs jean drawers, from 26 cents to 26.5-6 cents per pair; 50,000 pairs knit wool drawers, 57 cents per pair; 50,000 pairs wool stockings, heavy weight, from 26.73 cents to 27 cents per pair; 100,000 pairs light weight wool stockings, from 19.97 cents to 21 cents per pair; 50,000 cotton undershirts, with collarette, from 22½ cents to 25.11-12 cents each; 50,000 wool undershirts, heavy, 54 cents each; 50,000 wool undershirts, light, 35.49 cents each.

**STRIKERS BOYCOTT A CHURCH.**

The strike at the Beoli Mills, West Fitchburg, Mass., has developed a feature that is unique. It is stated that among the worshippers at the Methodist church the weavers constitute a larger part, and in their number it is said there is a family that seems to be trying to break the strike in favor of the American Woolen Company. The strikers' latest move is reported to have been the notification of the pastor that as long as this family goes to church there, just so long the majority of the men will stay away. Not much seriousness was given the matter or much thought either, but the Sunday service, it is learned, was reduced to a small number by the act. This is believed to be the only instance on record where a church has been boycotted in the endeavor to win a strike.—*Textile Manufacturers' Journal*.

—The woolen and cotton yarn districts of Philadelphia were damaged by fire on the 2nd of July to the extent of about \$300,000. Several stocks of yarn were destroyed

**THE TWINE MARKET.**

The prospect of a good crop in Manitoba and the Northwest has given firmness to the market for binder twine. Business has become active and orders are coming in rapidly. Prices for the remainder of the season will be regulated mainly by developments with regard to demand. As the season progresses and the true state of affairs with reference to supply and demand comes to light the price will go up or down, according to developments. Manufacturers are divided on the question of supply. Some say there will be enough, others predict shortage. The crop conditions at this time, all things considered, are not favorable to an adequate supply, but a great deal of twine will be made in the next few weeks. Whether it will be enough remains to be seen. In any event a surplus now seems out of the question.

The Consumers' Cordage Co. quotes the following prices: Sisal, 10½c.; standard, 11½c.; manila (550 foot), 13c.; manila (600 foot), 14c.; pure manila, 15c. These are wholesale prices.

**NOTABLE CARPETS.**

The Royal carpet factory at Wilton has just turned out three very fine carpets for the hall of the Goldsmiths' Company. The Goldsmiths' is one of the twelve great London livery companies, and though not so wealthy as the Mercers' or the Drapers', or even the Clothworkers', is still able to afford decent carpets for its hall, as will be seen from the description of the new ones. Of the three carpets, that made for the Court drawing-room is the handsomest, and combines effects in design which can only be found in hand-made fabrics. It measures 40 feet 2 inches in length, by 26 feet 9 inches in width, and is woven in lustrous worsteds, which impart a very striking appearance. Some idea of the work involved in the weaving of such a carpet may be gathered from the fact that 11 weavers have been continuously engaged in the manufacture during 16 weeks, and that it contains rather more than 5,300,000 (five and a half million) knots. The border itself is 6 feet wide in the Georgian style, with festoons of roses, etc., in shades of pink, purple, etc., and with a medallion in each corner. The margin of the carpet is of rich maroon color, 18 in. deep. The centre of the carpet is made up of a small design in two shades of purple crimson. The chief feature, however, is the coat-of-arms of the Goldsmiths' Company. This is worked in vivid shades of heraldic blue, red, green and purple on a pure white ground, and is surmounted with the typical figure of justice holding the scales. Underneath the coat-of-arms the motto is worked in black letters, "Justitia virtutum regina." The coat-of-arms measures about 10 feet by 9 feet, and is edged by a scroll of similar design and coloring as the border. Altogether 46 colors have been used in the manufacture of this beautiful specimen of hand-woven carpets.

The other two carpets, made of Saxony yarn, measure respectively 31 feet 8 inches by 28 feet 4 inches, and 36 feet 4 inches by 28 feet 2 inches, the larger of the two containing over 5,200,000 knots. The centres of these carpets are of the same design as the Court drawing-room carpet, minus the coat-of-arms, but the border of these consists of a bold scroll in golds and golden browns. Altogether, the three carpets furnish examples of hand-woven manufacture which are rarely seen except in Royal palaces, and will, it is claimed, vie with the choicest productions of Oriental looms. The old carpets in the Goldsmiths' Hall were first laid in 1835, and the new ones are in design, coloring and texture reproductions.

But a still more remarkable and valuable carpet is that owned by the Girdlers' Company, thus described in The Carpet Trade Review: Exactly three centuries ago bold James Lancaster was laying the foundations of British supremacy in India in command of the little squadron that sailed forth for "the Governor and Companie of Merchauntes of London trading into the East Indies." One of the directors was a certain Robert Bell, who in 1634 became master of the company. It is not too much to suppose that he was fully aware of the fame of Eastern rugs, for a proclamation of Charles I. specially referred to the "rich carpets of Persia and Gimboya" as being among the imports London was receiving. In any case, the worthy merchant must have sent a special order for one of them, for in the earliest minute books of the company it is recorded that such a carpet was made at the royal factory founded by Akbar the Great at Lahore. The measurements and design were obviously most carefully supplied, for in the centre of the carpet, which is 8 yards long and 2½ yards wide, are the company's crest and arms, showing St. Lawrence on the gridiron, holding the Bible in one hand and the emblem of his martyrdom in the other, with the motto "Give Thanks to God." At a little distance right and left are the master's own arms, and introduced into the design are representations of two sales of merchandise, on which are his initials and trade-marks. On the expiration of his term of office this entry occurs in the company's books: "Also, at this Court, Mr. Robert Bell did present a very faire, long Turkey carpitt with the Company's Arms thereon, which he freely gave to the use of this company as a remembrance of his love." The gift was evidently a treasured one, for at the time of the great fire, when the hall was destroyed, it was carefully saved; but after that it fell upon evil days, and was used as though it had no greater value than a bit of machine made drugget. About a couple of years ago it occurred to some members of the court to examine it and to obtain expert advice about it. This was readily given by two such well-known authorities as St. John Hope, of the Society of Antiquaries, and Purdon Clarke, of the South Kensington Museum, to which it was removed for thorough cleaning and renovation under his own personal supervision. This revealed the extraordinary velvet-like delicacy of its weaving and the richness and variety of its "Garden of Eden" bordering of softly hued fruits and flowers, blended, as only an Oriental art craftsman can, in fine color harmonies. Subsequently it was placed in a finely carved oak frame, to hang at the end of the company's hall behind the high table.

#### A UNIQUE TABLECLOTH—INTERESTING RELIC OF A FORMER CORONATION.

An interesting and probably unique linen damask tablecloth is at present in the possession of a Regent street firm in London. The cloth in question was manufactured in 1717, and is three yards wide and four yards in length. It was originally made for a Mr. Wilson, a linen merchant, of Balbriggan, Ireland, and came into its present owners' hands through one of his descendants. It is said to be the only specimen of its kind in existence, and is a remarkable example of skill in linen figure weaving. It formed an exhibit at the first exhibition of 1851. In the centre is the shield of Great Britain, France and Ireland, with two crowns and the letters G.R. At one side is a map of London, showing the Tower, Westminster Abbey and St Paul's, under which appears the following quaint inscription: "A new mapp of the City of London much enlarged since the great fire in 1666,

in which are several streets, places and buildings of note, which have been added since any other mapps of London before this hath been published in 1717." The other side shows a representation of the Coronation in Westminster Abbey, including the procession. Thus a further superscription reads: "The Coronation and Inauguration of George Augustus, King of Great Britain, France, and Ireland, Defender of the Faith, 1717. Long live King George." Under the different figures and persons appear the names and titles: "Lord Mayor and Aldermen," "Kettle Drums," "Trumpets," "Drums," "Darino," "Judges," "The Litany sung by the Bishops and Children of the Choir," "The King's Chaplain," "Sackbat," "With the Sword of State," "A Herald of Arms," "Earls of SV proclaiming the King," and "For mighty George now ascends the Throne, who for his valor excellent is now a King." "George with exclamations here is crowned, and with the name of Justice is renowned." Again is to be noticed the "Duke of Grafton bearing St. Edward's Crown," and "Lord Lirguville, his Majesty's sceptre bearer." In one corner we are informed that the cloth is "Wrought at Warrington, in the Counti of Down, in the North of Ireland," and "The weavers' art it is pronounced, so that rich nor poor without it cannot go."

#### TAPESTRIES FOR THE CORONATION.

Something like a quarter of a million pounds' worth of tapestry were prepared for the new Coronation Hall and Westminster Abbey for the Coronation, according to the Daily Mail. The same paper gives the following particulars regarding one superb fabric, stated to be valued at £100,000. The hall, the exterior of which was so successfully toned down into the semblance of age that it looked like a portion of the old Abbey itself, has a most interesting interior. Under the able hand of Mr. Guy Laking, the Keeper of the King's Armoury, the inside of the building was given the appearance of an old baronial hall. Ancient armour adorns the walls; between the medieval windows helmets and breast-plates and swords were quaintly disposed in proper positions; here and there the walls themselves had very much the appearance of ancient oak. Rich historic tapestries—some of the most precious in existence—adorned the hall and the theatre in which the actual Coronation was to take place. One is a superb piece of Flemish tapestry, worth by itself £100,000. Indeed, this sum was actually paid for it when it changed hands some time ago. In accordance with a beautiful custom in vogue in Europe in the Middle Ages, this particularly precious piece was lent to the King for use at the Coronation. Tapestries have been called the textiles of kings, and in the Middle Ages it was a custom at coronations to supplement the king's own store of fabrics by loans of finely worked pieces from private collections. The superb piece of Flemish tapestry mentioned adorns the Coronation Hall, in which the royal procession was to be formed in readiness for its stately progress down the nave to the place of the crowning. It is profusely enriched with gold thread, and gives a pictorial representation of the marriage of Queen Esther with King Ahasuerus. Several centuries ago it formed one of a set which belonged to the Spanish Government, and it adorned the royal palace at Madrid down to the time of Louis XIV., when it was carried away into France and came into the custody of the great Cardinal Mazarin. From his descendants it was purchased by Messrs. Duveen, and sold again by them a few weeks ago. It is considered by connoisseurs to be the greatest masterpiece of its kind in existence.



### THE CORONATION CARPET.

In our issue of May we gave some particulars respecting the Coronation carpet being manufactured by Edward Webb & Sons, of Worcester, England. We are able in this number to give some further particulars, together with an illustration, for which we are indebted to the Carpet Trade Review. The design is decidedly symbolical. It is carried out in tones of deep rich blue, with a lighter blue for the groundwork. The figures include the rose, shamrock, thistle, lotus, and the



Section of the Coronation Carpet.

Crown and Order of the Garter. The pile is  $\frac{3}{8}$  inch in thickness and the carpet itself  $\frac{1}{2}$  inch. Some idea of its immense weight and richness may be gained from the fact that the average weight per square yard is 8 pounds, and, as the carpet, or rather carpets, for it was necessarily made in sections, cover an area of no less than 725 square yards, the total weight is as nearly as possible  $2\frac{1}{2}$  tons. The preparation of the looms alone occupied nearly a month, and the method whereby the tufts are secured more firmly than has hitherto been possible is an invention of the firm mentioned, an outcome of the anxiety to produce a Coronation carpet worthy of its reputation.

### FIRES CAUSED BY NAILS.

"Speaking of insurance matters," said a listener, "I suppose the plain, old-fashioned nail has caused more fires in the big establishments where machinery is used in many and complicated ways than any other little thing in existence. The only thing needed is for it to come in contact with some other hard material with sufficient force to cause a spark and heat generation. Nails have really produced a heavy per cent. of the cotton fires of the country. During recent years, on account of steps taken by the owners and conductors of the larger cotton and by-product plants at the instance of insurance men, the nail has not been such a prolific producer of fires.

"A way has been found, for instance, in cotton gins, cotton mills and in plants where cotton seed are put through manu-

facturing processes, of extracting nails and other weighty and flinty substances that may find lodgment in these inflammable products. Gravity is the natural force used. Nails and rocks and materials of this kind are heavier than cotton and its by-products, and they have a tendency to force their way to the bottom of the heap. By allowing these products to pass over a rolling belt arrangement these heavier materials filter toward the bottom, and are finally extracted, so that when the cotton or the cotton seed pass through the grind in the various manufacturing processes there is but little danger from fire so far as these things are concerned."—New Orleans Times-Democrat.

### DYEING WOOL IN HALF-WOOL GOODS WITH ACID DYES.

The dyeing of half wool has made great progress with the development of dyeing chemistry, as nearly every fresh discovery in dyes increased its scope and powers.

Formerly the art was mainly confined to three methods:

1st. The wool was first dyed alone, and the cotton was subsequently dyed in a second bath, cold, and containing tannin, iron and logwood. This process cannot possibly give vivid shades on the wool as, however bright they may be when the goods leave the first bath, they are always spoiled in the after-dyeing of the cotton.

2nd. Already dyed cotton warp was woven with woolen yarn. The piece was then dyed, originally with dyewoods, but later with acid coal tar colors. Of cotton dyes, excluding Turkey Red, which is usually too expensive, only Vat Blue, Catechu Brown, Aniline Black, and Logwood Black are suitable, the last when the use of acid dyes is for any reason to be avoided.

3rd. Cotton and wool were mordanted one after the other in the piece, and then both dyed black with logwood.

It follows that bright colors could only be obtained on half-wool in a very limited choice. The first things to come to the assistance of the half-wool dyer were the basic dyes, which made it possible to dye the cotton in the piece to any desired color or shade. The process, when basic dyes are used, generally consists in dyeing in the piece, doing the wool first, usually with an acid dye, and then dyeing the cotton with basic dye on a mordant of tannin and tartar emetic. By this method it is easy to dye cotton and wool harmoniously, and it is therefore in great favor, although it involves repeated rinsings, in spite of which the colors always rub slightly.

We had next the introduction of the one-bath process with Diamine Colors and other substantive cotton dyes. This was a notable step in advance, as only one bath is used, and very little rinsing is required. The colors, too, are very fast, and will not rub, and there is no limit to the choice either of color or of shade. The process has naturally been extensively adopted. Nevertheless, the one-bath process is unsuitable for certain classes of goods, such as half-wool serge and alpaca, which readily spoil with hot neutral dyes. These are generally done by first dyeing the wool alone with an acid dye and then the cotton in a second bath, feebly alkaline, and cold, or at most lukewarm, with Diamines. Of course, Diamines must be chosen which have the least possible action under the circumstances on wool. The dyeing is best done with a washing machine.

The reverse of this process has many advantages, viz., to dye first the cotton with a dye fast to acid, and then to dye the wool with an acid dye. In this way lighter colors and a better handle are obtained. The only drawback is that there are very few cotton dyes suitable. Aniline black, cutch and



indigo are among the best. Even the recent introduction of the sulphur dyes has not increased the number appreciably.

The process of dyeing during milling suffers from the same disadvantage. Although it rapidly won favor, it is not used now, except for black. It consists in dyeing the cotton first, i. e., during the milling, with Diamine Fulling Black, and then dyeing the wool in an ordinary acid dye-bath, and it must not be forgotten that the wool retains acid from the bath, and this acid may rot the cotton while the goods are in stock. The cotton itself, too, retains a little.

Furstenhagen and Appleyard investigated this matter years ago. Having boiled wool with 5 per cent. of its weight of sulphuric acid diluted with water, they found that more than half, i. e., 2.83 out of the five per cent, was absorbed. Of this 2.83 less than half was washed out by three boilings of the wool with a hundred times its weight of distilled water.

Before the first boiling the wool contained 2.83; after first do., 1.99; after second do., 1.65; after third do., 1.57.

A fourth and further boiling extracted only traces, others residue. These results have been repeatedly confirmed, and it follows that no rinsing, however careful, will remove the danger above alluded to. Neutralization is, therefore, indispensable. The cheapest substance for neutralization is washing soda, but this cannot be used in the case under consideration on account of its effect upon the colors. The best substance to use is acetate of soda. This is added (for economy of it) to the last rinsing bath only, when there is a minimum of acid requiring neutralization, and neither the excess of acetate of soda nor the soda salts produced by the neutralization affect the colors in any way.

It has also been abundantly proved by experiment that the use of acetate of soda causes no weakening of the fibre. The amount which has to be used is such as will make the last rinsing bath a solution of the salt of from half to one per cent. strength. Excess has, of course, to be avoided, for although acetate of soda is not dear there is no need to waste it, but it will do no harm to the goods in any respect.—Dr. R. Loewenthal.

### TWO LARGE MILLS.

The largest cotton mill in the world is to be built near Kansas City. It will cost ten million dollars, and will have 500,000 spindles and 12,000 looms. It will employ 4,000 operatives and have a pay roll of \$2,450,000 a year. The capacity will be 170,000 bales of cotton a year, with an output of 75,000,000 pounds of finished cloth. The value of the annual output will, it is estimated, amount to \$12,750,000. The mill will be revolutionary in its construction. Electricity will be used as the motive power and several new devices will be installed. There will be four mill buildings, covering an aggregate of 2,000 acres of ground.

The largest denim mill in the world is to be built near Greensboro, in the Southern States. The main building will be 750 feet in length by 150 feet in width, three stories, with the necessary additional buildings, such as engine and boiler rooms, dyehouse, office, warehouse, etc. The equipment will be 60,000 spindles and 2,000 looms, the operation of which will require about 2,500 hands. The mill will be surrounded by more than 600 cottages, also churches and schools, which the company will build for the exclusive use of its operatives. The village will be connected with that at the Proximity mills, which the company also own, by a broad avenue, graded and macadamized. The product will be exclusively indigo blue denims. The present plant, now operating 1,000 looms on the same fabric, will immediately be increased to 1,200, thus

giving this company a total of 3,200 looms, making them by far the largest producers of denims in the world. The annual production of this great enterprise will be fully 50,000,000 yards, amounting in value to about \$5,000,000.

### NEW DEVICE FOR SINGEING CLOTH.

In singeing cloth, it has been customary hitherto to employ a bed of metal, which is brought to the required heat by means of gas, etc., the cloth being drawn over the surface to singe away the stray or upstanding hairs; or a flame has been allowed to play momentarily on the surface of the cloth, and so to ignite the stray fibres. According to a new invention, one or more platinum or other wires are mounted horizontally between two opposite terminals, and, on the opposite side of the wire and parallel therewith, two rollers or guide bars are provided being adjustable in height. The cloth to be singed is contained on a roller, and the end is passed over the guide bar and wires referred to, to a taking off roller, the speed of which can be regulated. An electric current of suitable intensity is passed between the terminals through the wires, which are brought to an incandescent state of heat, and the cloth is brought near to or in contact with the said wires, as it is drawn through the apparatus. The cloth is thus subjected to a singeing process.—Textile Excelsior.

### EXPERIMENT IN SHEEP DENTISTRY.

A New South Wales correspondent says that a shepherd of Hargreaves, near Mudgee, has tried dentistry for sheep with great success. He had a valuable ram which found great difficulty in masticating its food, owing to the loss of teeth. Artificial teeth were inserted, and the animal has since vigorously attacked its fodder. This is believed to be the first experiment of the kind in the colony.

### A USE FOR OLD RUBBERS.

A church in New England lately attracted much attention and made a good many dollars by advertising largely a Rubber Social. Of course people's curiosity was aroused by such a slangy heading, but they were agreeably surprised to find out that the invitation was to bring or send to the church all the old rubber overshoes, garden hose and worn out mats about the house. These were sold as junk and brought more money to the church than a rummage sale.

### CLOTH HIDDEN IN PAPER.

Jacob Wener, a clothing manufacturer of New York, was recently arrested, charged with smuggling \$20,000 worth of woolen cloth into the United States from Canada, at Richmond, Vt. Specifically the accusation is that Wener brought 34 bales of cloth across the line with 22 bales of waste paper, which is admitted free, the whole being billed as paper. "Two weeks ago," he said, "I was subpoenaed to appear before the federal grand jury, at Windsor, Vt. I went there and told them all about my transaction with one Ellis, who claimed to represent a mill in Holyoke, Mass. I learned in Windsor that a band of smugglers, with headquarters in Boston, had been caught bringing cloth across the border, and that other merchants besides myself had bought the contraband stuff. Why I have been arrested I do not know. I am not an importer. If the cloth I purchased was smuggled, I did not know it, and I do not know it now."

**MILDEW.**

Mildew in woolen, as well as in cotton fabrics, is traceable to a fungoid vegetating at certain temperatures in presence of damp air. Summer weather is particularly favorable to the growth of the fungoid, August being the month especially favored. Certain dyes, for instance vat blue, are particularly given to develop this parasite, this peculiarity very likely being accounted for by the alkaline nature of the lakes. There are two kinds of fungi which make their appearance during the weaving operations. If the cloth remains cold, the fibre itself is not attacked, and dark hues are hardly, if ever, injured. The mildew spreads superficially over a large space, and is easily removable with a brush. The case, however, becomes serious if the parasite originates in a hot cloth. It then appears in smaller or larger patches, and generally destroys the fibre. Mildew stains of this description leave bare spots after milling. They also result often from the cloth not being rinsed immediately after the milling, the presence of free alkali favoring the propagation of the fungoid. The best preventive is never to allow such goods to lie in a heap for any considerable length of time.

**WASHING UNDERWEAR.**

Frequently manufacturers have occasion to wonder why the goods of their competitors are so much superior to their own. In many cases, an investigation would disclose that the trouble is not caused by inferior workmanship in knitting or finishing, but is due to inferior stock or manipulation of the same, or to faults in the methods of scouring. It is impossible to lay down a general rule for scouring all classes of knit underwear, as there is such a diversity of stock, and each kind requires special treatment. For mixed goods composed of cotton, shoddy, etc., washing and bleaching is best done in the roll. The best machine for scouring knit goods is the well known washing or fulling mill in common use. Recent improvements have made adjustments and repairs very easy. The best machine is the cheapest, and, if the mill is as it should be, the garments will not be rolled, chafed or matted together. To preserve elasticity knit goods should not be felted.

The mistake is frequently made of first putting the goods in the mill and then throwing the hot liquor on them; this method is all wrong. The proper quantity of soap should be put in the mill first, and the goods entered equally on each side. The soap should not be too hot, as a high temperature causes an excessive shrinkage. The workman should be provided with a thermometer, and held responsible for any variations in the temperature of the soap applied to the goods. The soap should be neutral and of the best quality; if alkali is needed, let it be added by the workman himself.

In washing or rinsing use plenty of liquor, so that the garments may be kept open and felting prevented. The rinsing water should be at the same temperature as that of the scouring liquor.

It is impossible to tell in advance how much a new grade of stock will shrink in the finishing process. When any change is made in the raw material, a few dozen should be put through without delay to determine the actual shrinkage; otherwise the manufacturer may find it necessary to change the size number from that intended. Right here, I wish to offer a word of warning against goods that are sold as non-shrinkable—"Beware of the dog."

For goods with a large percentage of cotton, it is well to use the soap warmer than for all wool goods. The quantity

of oil used in the raw stock should be taken into consideration, as it has an important effect on the subsequent process of washing. Mineral oil is especially difficult to remove—Old Superintendent in Textile World.

**CURIOUS MERCERIZATION PROCESS.**

A process has been patented in Germany for mercerizing cotton with such concentrative lyes and under so high a tension that it breaks on contraction. The broken threads are then spun "exactly as if they were raw cotton." It is claimed that the extraordinary lustre thus produced justifies the process. We are rather afraid, however, that the broken threads will not spin like raw cotton.

**BLEACHING.**

Anyone who has had experience of bleaching vegetable textiles with chloride of lime knows that the quantity of bleaching powder required gets greater from morning to evening. Lagache has shown that the effect is due to the formation of organic acids by the action of bleaching on the fibre. Hence, every time fresh chloride of lime is added to the bath, through which goods are continually passing, part of it is neutralized by the organic acids present, and part of it, instead of bleaching the goods, sets to work to make more free organic acid. During the night there is a further waste, for then the free organic acid present when work was stopped is further oxidized to carbonic acid. Lagache proposes to remove the difficulty by passing carbonic acid through the bleaching bath, or through the reservoir in which the bleach solution is stored. It is said that the saving in bleaching powder effected by adopting this process amounts to about 12 per cent. In one bleaching works it is reported to be saving two casks a week, or about fifty tons of chloride of lime per annum.

**UNGREENABLE ANILINE BLACK.**

The after-treatment of aniline black at higher temperature with chromates, chlorates, or salts of iron, with a view to prevent greening, has become common practice, though the result is far from satisfactory. According to recent observations, much better results are got if the oxidizing agent is applied in presence of a small quantity of aniline salt. Thus even very faulty blacks can be rendered fast by treating them near the boil for 15 minutes with 10 grs. of bichromate of soda and 1 to 2 grs. of aniline salt per litre. The mechanism of this reaction is somewhat obscure, for in no case can the effect be attributed to the small additional quantity of black which becomes incidentally precipitated upon the fibre.—Textile Record.

**FULLING AND OILING FABRICS.**

A novel product, which has proved of value in the fulling and oiling of woven fibres has recently been patented by an Italian manufacturer. The product is obtained by taking or forming a soda soap of castor oil, either solid or liquid, and dissolving it in oleine; then pouring pure water into this solution and agitating it until it assumes the density, fluidity and oiliness adapted for its employment in fulling and oiling the fibres to be treated. 100 parts of hydrate of soda at 25° B. are mixed with 200 parts of castor oil. This mixture is now well agitated in a cold state (if a slow reaction is desired or with the application of heat if it is wished to accelerate the

reaction) until soap is produced. To this soda soap of castor oil is added 400 parts of oleine, the mixture being heated until completely dissolved. Upon allowing the mixture to cool, a special oily substance is obtained, into which is slowly poured, up to 4,000 parts of pure water or less, the whole being constantly agitated in a cold condition, whereby the final substance is obtained which, when employed in oiling wooden fibres in the usual manner gives better and more economical results than the substances generally employed for this purpose. In the water of the last operation a certain quantity of glycerine may advantageously be dissolved beforehand, operating in a hot state so as to obtain a homogeneous solution. In the example given above there may be added to the 4200 parts of pure water, 700 parts of glycerine.

The employment of glycerine is more particularly useful for oiling substances which it is desired shall remain greasy for a long time after treatment. According as it is wished that the appearance of these materials shall be more or less greasy, a larger or smaller quantity of glycerine is employed. The ratio between the castor oil and hydrate of soda, and the degree of this latter in the first soap, may vary according to circumstances; for example—to 100 parts of hydrate of soda at 5 lb. may be added 500 or more parts of castor oil, as, in the case of oiling cottons there should be greater alkalinity, and on the contrary, a greater preponderance of oil for oiling wools. The ratio between the oleine and the castor oil soap is likewise variable, but by way of example it may be given as 100 parts of oleine, in which are dissolved 300 or more parts of castor oil soap. Another factor causing variation in the ratio may be the quality of the oleine employed. In general if a white and odorless resultant product is desired, white oleine should be employed and in a minor proportion. The water which is added in order to obtain the final product may also vary in proportion to the oil, but approximately for 100 parts of oil, 100 to 3,000 or more parts of water may be added. An abundance of water is desirable for fulling stuffs, and on the contrary for oiling fibres the quantity of water should be reduced to the lowest limits.—Textile Manufacturer

**HOW SHOULD BOILER HEATING SURFACES BE CALCULATED.**

There has always been, says the Textile Record, a difference of opinion as to the correct way of calculating the heating surfaces of boilers. Some engineers have maintained that the exterior circumferential surface of a tube, that immediately surrounded with water, the wet side, was the proper surface to consider, while others, and we think they are largely in the majority, assert that the inside surface of a tube, that exposed directly to the products of combustion, is the one to be considered. The difference between the interior and exterior diameters of a tube makes a great difference in the circumference, and of course makes a very great difference in calculating the heating surface of a number of tubes. Take, for example, a tube 3 in. in diameter and refer to Figs. 1, 2, 3, 4, 5 and 6.

- 1 represents nominal diameter, namely, 3 in.
  - 2 is external diameter, 3.5 in.
  - 3, thickness, .217.
  - 4, internal diameter, 3.07 in.
  - 5, internal circumference, 9.64 in.
  - 6, external circumference, 11 in.
- Taking the whole circumference as heating surface—first the internal and then the external circumference—we should find in 36 tubes 144 in. long, the difference:

Internal circumference, 9.64 in.  $\times$  144 in.  $\times$  .36 =  $\frac{49973}{144}$  = 347 superficial square feet.

External circumference, 11 in.  $\times$  144 in.  $\times$  .36 =  $\frac{57024}{144}$  = 396 superficial square feet, showing the difference of 49 square feet.

In cases where the interior diameter and surface are taken, there is generally a reduction made in the calculation of effective surface. The upper part of the inside of a fire tube becomes an arch for the products of combustion to impinge against, the lower part is unfavorable for heating surface, as the bottom of fire tubes is soon covered with a fine deposit of soot or ashes and the heat meets with a non-conductor. See Fig. 7. Another thing: We cannot boil water by applying heat at the top.

In a paper lately presented to the American Society of Mechanical Engineers, C. W. Baker questions the correctness of the usual practice of computing the horse-power of steam boilers from the heating surface. He affirms that by the method usually followed there results an error of from

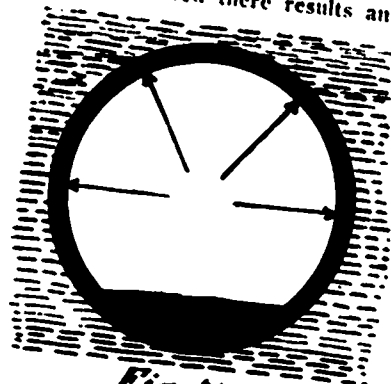
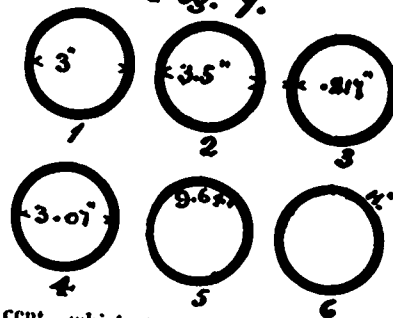


Fig. 7.



7 to 17 per cent., which, he says, is due to the practice of taking the surface in contact with the water, instead of that in contact with the fire gases, as the heating surface. Where these surfaces are flat there will be no difference between one side and the other, but the boiler-heating surface is made up largely of tubes, and in these there is a difference of 17 per cent. between the interior and exterior surface in the case of a 1-inch tube, and of 7 per cent. in the case of a 4-inch tube. The error to which Mr. Baker calls attention lies in the failure to appreciate the fact that the heating surface of the boiler, on which its steaming capacity depends, is the actual surface exposed to the fire or fire gases. With clean metal, the actual difference of temperature between the two sides of a boiler plate (or tube) is never more than 1° Fahrenheit, and Lord Kelvin has observed that for all practical purposes we may consider that the heating surfaces of boilers conduct heat as though they were no thicker than paper.

It follows from the foregoing that the temperature of the heating surfaces of steam boilers is that of the wet side, and

not that of the fire side of the plate (or tube). Although this is common knowledge among engineers, Mr. Baker claims that it has been generally overlooked by engineers and writers on engineering subjects, who have not insisted that the fire side of boiler tubes should be that from which heating surfaces should be computed. He illustrates his argument by the statement that if the fire side of the tubes be increased by forming ribs upon it—as is the case with the Serre tube—the steaming capacity of the boiler is thereby increased; but no such increase of steaming capacity will result from the placing of the ribs on the wet side of the tubes. Mr. Baker further makes the interesting statement that a thin coating of scale on the wet side of a boiler plate affects the steaming capacity less than a furring of soot on the fire side, which will be something of a surprise to most engineers. Another deduction is that circulation of water in a steam boiler is of much less consequence than is generally supposed in its relation to efficiency. Good circulation is desirable because of its influence in assuring the equal heating of all parts of the structure, and thereby preventing undue strain in certain parts, but in Mr. Baker's judgment it can have no effect on economy or efficiency.

#### PASSING OF THE WOOL SORTING TRADE.

Wool sorting is a dwindling craft in the Yorkshire trade, although the great county is consuming weekly more wool than ever before. Yet a correspondent of the American Wool Reporter says that if Bradford were canvassed it would be found that there are fewer wool sorters to-day than was the case ten years ago. The reason is not far to seek. One of the largest and best known Bradford firms at one time employed regularly 140 men as wool sorters, to-day they have only ten, and yet they never consumed so much wool as they do to-day. What is the reason of this radical change? The reason why wool-sorting is fast going to the wall is because of the great strides that have been made in Australia and elsewhere in the matter of wool preparation for market. Plenty of squatters are still living in Australia who remember the time when they used to send their wool to market with only the britch ends and lumps of dung removed, the bellies and pieces all being rolled up in the fleece, very similar to what ignorant farmers do to-day. When those fleeces came to Bradford, before they could be utilized, they needed well sorting, but to-day all the bellies, locks and pieces are removed in a thoroughly businesslike way, so much so that when the bales are opened in the washhouse of the wool combers, or rather a blend made in the warehouse ready for washing, all the preparers have to do is simply to run the wool through to see that the quality is uniform throughout. Ninety-nine per cent. of Australian wool growers prepare their clip for market in such a businesslike and practical way that sorting can be dispensed with entirely, all the men do is simply to run it through to see that the quality and length is fairly uniform. In the good old days which sorters speak about, every fleece had to be opened out, classed and skirted. Those were the days when sorters "addled" £3 and £4 per week and never knew what it was to go on short time, but to-day things have vastly altered, and the wool sorter's job is as precarious as any other.

#### BLEACHING COTTON.

A bleaching process for the removal of oil stains from cotton goods has been proposed to and approved by the Society of Mulhouse, under whose directions tests have been

made. There are three modifications of this process. The first consists in the addition of Turkey-red oil to the lime solution; washing in hot water before souring. In the second method the addition is made to the lime and soda, or caustic potash solution. In the first case the oil is mixed in equal parts with colophonium before adding to the solution. In the second, one quart of the oil is added to each 20 cubic feet of caustic solution, standing at 2' B. Lastly, the pieces can, after singeing, be saturated with the oil and steam for 1½ hours, at a pressure of 1½ atmosphere, then washed in boiling water and bleached in the usual way.—Textile Record

#### JOSEPH MARIE JACQUARD.

In 1752, in a smoky suburb of Lyons, was born Joseph Marie Jacquard, inventor of the loom which bears his name. He came of healthier, sturdier stock than did the average "canuts," as the poor weavers were called, for his grandfather and those before him had been farmers on the banks of the Saone. His father had left the small family domain to remove to Lyons to take up the business of silk weaving. He did not improve his fortunes, and died young, leaving nothing of the original farm lands to his son Joseph Marie, except two looms.

Let us enter the suburbs of Lyons and view the silk weavers as they lived in the time of the younger Jacquard, and, indeed, continued to live up to sixty or seventy years ago. We shall then better understand the strength of Jacquard's incentive to invent some means to better the conditions of silk manufacture, and ameliorate the sufferings of the weavers.

The pictures which historians have drawn of these abodes of the silk weavers are not attractive. Everywhere are the signs of poverty, overwork and discouragement—an air of chronic, subdued melancholy. The roofs are blackened by smoke and by the vapors and fumes from the dye works. A constant mist, an unhealthy miasma, hangs about the abodes of the workmen, which even the breezes from the Rhone and the Saone fail to carry away. The streets are narrow, winding and tortuous, bounded on either side by houses from four to six stories high; the walls, like the roofs, are blackened and green-stained.

The numerous small windows of these houses are without sills or balconies, and the greater number are destitute of glass. Sheets of oiled paper are substituted, being pasted in the window frames to shut out the glare of the daylight lest it fade the colors of the stuffs. As if this were not in itself dismal enough, the paper is yellowed by the elements, and often torn and detached from its original fastenings and hangs flopping dismally in the breeze. Each of these abodes is constructed with one common entrance for its 200 or more inhabitants. This staircase is at the end of an alleyway, bordered on either side by an open drain leading to the street sewer. This alleyway is muddy and offensive. Dampness, mold and decay are everywhere.

Enter one of the buildings. The rooms are bare of comfortable furniture, the main object being ever the same—the loom, the life and the death of the weavers. The weaver crouches before his web, while the other members of the family assist him. They are all unhealthy, dull and listless in appearance, the children of circumstances, stunted in size, with sunken chests, high shoulders, swollen knees, hollow, pallid cheeks, and eyes expressionless save for a look of settled patience. One sees no vigorous men, no attractive, wholesome women. So narrow is the life of these toilers, that even their language is peculiarly their own, a patois only half intelligible to the outside world.

Sunday brings a little brightness into their lives. Then the weaver changes his linen his wife and daughters deck themselves in their best and go forth to the churches. The evening may be spent in the parks or by unfrequented roads in the outskirts of Lyons. The tea gardens, visited almost exclusively by weavers, are well filled on Sunday mornings. The young men and women dance, and forget for a time the comfortless surroundings to which they must return, and the drudgery they must take up again on the morrow.

Occasionally out of this mass of phlegmatic humanity there issues one with more ambition and greater physical force. Such scrape together, by the most rigid economy, money to buy looms of their own. They in turn become small manufacturers, grinding down their apprentices and work-people as they were ground down in their youth. These successful ones move away from the squalid surroundings we have pictured, into the city of Lyons proper, throwing off the brown vest of the workman, and wearing the long skirted coat of the merchant.

Such, then, was the condition of the silk weavers in the time of Jacquard. We have said that his inheritance was a couple of looms, so we may picture him as fortunate among his fellows in having this start in life. Superior education he had not, but Nature had bestowed upon him mechanical genius. In writing of Jacquard, Lamartine says:

"Ordinarily the mechanic can do nothing without geometry and mathematics; these sciences are the figures by which he calculates, and the terms by which he expresses his thoughts. But sciences, which are the necessary tools of vulgar minds, are the servants of genius. When genius finds them not ready at hand, it passes them over, or invents others for its own use. A vigorous and patient imagination, the gift of nature, is the only source of all the great inventions which have exercised such material influence over the entire world. The most valuable machines have been invented by the laboring artisan, the shepherd, the dreaming monk, the potter, the wool carder, the sailor, the weaver and the blacksmith, and not by the learned philosophers. The workshop has given birth to more masterpieces in practical art than the academy. Chance and imagination are the parents of invention, science is but its nurse."

Jacquard knew little or nothing of books, but he possessed mechanical genius to an extraordinary degree. It was said of him, a little spitefully, perhaps, by others who accomplished less, that he was a mere machine who invented other machines.

From morning till night he thought and planned ways of simplifying and perfecting the tools of his own and other trades. He was obliged at the same time to work diligently for the maintenance of his family, for he had early taken to himself a wife, the daughter of a gunsmith of Lyons.

The gunsmith had been a friend of Jacquard's father, and the two young people became attached to each other when very young. Their future looked bright, for the gunsmith had promised his daughter a marriage dot, which with Jacquard's little inheritance would give them a good beginning. This promise he was unable to fulfil, however, owing to reverses in his modest means. But Jacquard and his sweetheart wedded just the same, for theirs was a romance of real love, where dollars and cents did not count. We are told that she was amiable and sweet of disposition, sympathizing with her husband in his work, and that his domestic life was very happy.

Of Jacquard's minor inventions is recorded a machine for making fish nets, for which he was awarded a prize, but beyond that it was of little profit to him. Through the advice

of a merchant, M. Pernon by name, he first turned his attention to the improvement of silk looms. An invention which would promote the silk weaving industry by introducing the use of better machinery, would mean fame and fortune to the inventor; it would also better the condition of the weavers, who now worked in cramped and unhealthy positions over the clumsy looms.

What perhaps Jacquard did not foresee, if we are to give him credit for humanitarian motives at all, is that many must suffer by loss of work when his contrivance reducing the number of hands at each loom, should come into general use. Or, perhaps, he looked over the heads of his generation and the next, and saw a body of happier, healthier people growing up, the result of working under improved conditions.

At the beginning of Jacquard's career, the loom invented by Vancanson was in use. This machine worked somewhat awkwardly, and Jacquard conceived the idea of bringing the art to perfection and dispensing with the labor of children, as employed at the looms of Vancanson.

His experiments were costly and he failed to introduce his improvements into general use. He was ridiculed by his enemies, pitied by his friends. His two looms were sold for debt and even the household goods went piece by piece for food. His loving wife, ever loyal, patient and hopeful, still encouraged his experiments in the face of failure and misfortune.

At length, when they were reduced to actual want, Jacquard became a laborer at lime burning at Bugey, and his wife found employment in a straw factory. Whether their fortunes improved rapidly, or whether they suffered years of such hardship we do not know, for of Jacquard's life little record is made until we find him fourteen or fifteen years later, enlisted and fighting with the citizens of Lyons, when that city was besieged by the army of the Convention.

The citizens of Lyons, anxious to preserve the city from destruction, rose in a body—gentlemen, priests, manufacturers, workmen—all took up arms. But the city was forced to capitulate, and plunder and execution followed. Jacquard concealed himself for a time in a shop where his wife was then employed.

His son, then a lad of 16, enlisted with one of the Republican regiments, and, persuading his father to do likewise, they left the city together to fight with the army. Jacquard had been opposing. The son, the hope and pride of his mother and father, fell in battle, mortally wounded, while the father, sick in soul and body, was left to languish in the hospitals. When he finally returned to the dismantled city, it was long before he found his wife, who had been reduced to the direst poverty. She died soon after, from overwork and deprivation, with her last breath encouraging her husband to continue his inventions and to trust to Providence and his own genius.

Aided by his old patron, M. Pernon, Jacquard at last completed a model of his machine, which was placed on exhibition at the Industrial Exhibition of 1800. For this he was awarded a bronze medal. He hastened to protect his invention by patents and, then, with the restlessness peculiar to inventive genius, set about improving it. The result of his later improvements was that where his first machine had dispensed with but one workman at a loom, it now did away with the services of three men and two women.

As this loom was generally adopted, untold numbers of weavers were thrown out of work. His name was hooted by those who wandered in the streets hungry and with their occupation gone. He was called "traitor" by those who had been his fellow workmen. But in time conditions righted

themselves, and many were benefited where comparatively few had suffered.

Jacquard shrewdly presented his model to the authorities, who sent it to Paris and called the attention of the Emperor Napoleon to the man who, by lowering the price of handicraft in France, would lessen competition and increase the general demand. Jacquard was installed in the Conservatory of Arts and Trades, in Paris, that he might construct his machine under the best conditions. The discerning eye of Napoleon saw in the invention future benefit to France, and had the Government grant a pension of a thousand crowns to Jacquard, upon condition that he should reserve the benefit of his looms exclusively for his own country. With his own hands, Jacquard, while in the Conservatory, wove a magnificent gown of rich brocade, which he presented to the luxury loving Empress Josephine.

As we see, Jacquard had succeeded, but not, alas! until the evening of his life, when his affections and his hopes lay buried in the graves of his wife and son. Something of melancholy always rested like a shadow on the face of this successful old man, though he took great personal pride in what he had accomplished, and the fame which now was his.

He removed to Oullins, a small town, where he died on the 7th of August, 1834, at the age of 82. He gave somewhat, though not lavishly, to the poor, was devoted to his church, and spent his latter days peacefully, leaving behind him a name famous in the annals of the silk manufacture. A statue was erected in Lyons, in memory of the man who had done so much to benefit the silk industry, the life of his native city.—Textile World.

### A FAMOUS INDUSTRIAL VILLAGE.

Among the villages in England made famous by its local industries is Saltaire. It was founded half a century ago by Sir Titus Salt and was named after him. Sir Titus was one of the great founders of the modern woolen industries, and his traditions are still carried out. Nearly 4,000 people are constantly at work on the ten acres which the great works cover. The air in the mills is cooled in summer and warmed in winter. A dining-hall has been provided, where meals can be cooked free, or are supplied at cost price. There is an armory, drill-room, and gymnasium especially for the hands; while the splendid Saltaire Club and Institute was erected at a cost of £26,000. Sir Titus spent another £16,000 on a church for his people, and erected also 24 baths and wash-houses, at a cost of £7,000. A public park was laid out by him, and education was provided for by a fine building, capable of holding 750 children, and costing £7,000. A boathouse on the River Aire, a cricket ground, and various other athletic institutions add interest to the lives of the employees, and accidents are provided for by the setting aside of a large sum to pension those permanently injured.

### WATERPROOF TISSUES.

A German patent has been taken out for waterproofing fabrics with an emulsion in water of substances insoluble in that liquid, such as paraffin, stearine, palmitine and the metallic salts of fatty acids, as well as beeswax and vegetable wax. The fabrics are boiled in these emulsions and dried. The fabrics then become perfectly waterproof, but remain quite pervious to air, as the interspaces between the threads are not stopped up. The repulsion of the threads for water is quite sufficient to prevent any wet filtering through the cloth, but offers no obstacle to the passage of air.

### A NEW TEXTILE FIBRE.

A new fibre known as aramma, has recently been discovered which can be obtained from a variety of plants commonly known as carapichos. It is almost white in color, very fine and flexible, and is from 2 to 3 yards in length. It has been called aramina, owing to its almost metallic lustre and wonderful flexibility. The plant from which the fibre is derived is strong and vigorous, and no special care is required in its cultivation, it being perfectly adapted to uncultivated lands. It grows wild throughout the entire western part of the state of San Paulo and is being cultivated on a large scale on the plantations in the vicinity of Campinas. Articles made of this fibre were recently exhibited at the Polytechnic School, Sao Paulo. These included cords, twines and canvas suitable for coffee bags.

### PROFITABLE RAG WEAVING.

Through the chance that the loom of a manufacturer of old-time rag carpet was standing disused in the basement, two bright women artists in New York, conceived the idea of starting the old machine on a second period of usefulness. Now they have become full-fledged manufacturers of artistic silk rag portieres, couch covers and rugs woven from rags of ingrain carpet. These young women have made their products essentially the much sought for possessions of the rich, and so have made their adventure a financial success.

### GREEN FLEECE SHEEP.

Sheep with green fleece are a novelty, but they are to be seen in Germany, near some copper works. They live in the dust and fumes, and drink water contaminated by copper.

### FABRIC ITEMS.

W. & D. Dineen, of Toronto, will build a four story addition to their present premises, to be used in connection with their fur manufacturing business.

The store occupied by the Lake of the Woods Clothing House at Rat Portage, prior to the fire which destroyed the stock, has been refitted, and opened with a complete new stock.

Thousands of sheep have perished during the unprecedentedly severe cold and winter storms in Cape Colony. This will affect the supply of wool from that centre of production.

Exporters of woollens and worsteds to the Cape have been expecting the conclusion of the war so long, that considerable supplies of all classes of these goods are lying there awaiting the opening of business.

The Excelsior Shoe Co., of Toronto, has been incorporated with a capital of \$50,000. The company is composed of H. B. McCarthy, John Stewart, C. E. Culbertson, C. C. Allan and Dr. C. E. Stacey, all of Toronto.

Alex. Mills, merchant, of Eganville, was victimized recently by some dishonest person, the sum involved being, however, small. While packing wool into large bags he came across a quantity of sand which had been placed in small sacks made out of old cotton and tied. The bags of sand had been sold to Mr. Mills in the wool, but he did not know it until he was packing it ready for shipment. The perpetrator of the fraud he does not know. Five pounds of sand were found in the wool.

A trader arrived in Winnipeg recently from Moose Lake with a valuable lot of furs, including many choice bear, mink, otter, fox, and fisher pelts. He says that muskrats were plentiful in his district last winter.

Starr & Sutcliffe, who commenced business at Kingston largely on borrowed capital in 1897, and did a good trade in fine dry goods, have assigned, with liabilities of \$76,000, and nominal assets of about \$50,000.

The Cassella Color Co., New York, have sent out sample skeins dyed with their Immedial Sky Blue powder pat. dyed in the standing bath, three shades, with 3%, 5% and 9%, and after treated with bichromate of potash, sulphate of copper and acetic acid. The colors appear to be good.

Twine manufacturers state that the crops of the southern states which are being harvested are taking from 25 to 50 per cent. more twine than they anticipated and that the amount available for distribution further north will not be as large therefore as was expected. Prices have accordingly advanced.

The Sebringville Flax Company, at its annual meeting, elected Jacob Kiehna, Jacob Litt, Dr. J. J. Paul, W. H. Coulton, George Kastner and Christian Werner, directors. J. Kiehna was elected president; G. Kastner, vice-president; Mr. Hamilton, secretary; Dr. Paul, treasurer. A dividend of 8 per cent. was declared.

The Waldron Drouin Co., of Montreal, has been organized, with a capital of \$90,000, to carry on throughout the Dominion of Canada, the business of manufacturing and dealing in hats, caps, garments, furs and wearing apparel, and as general furriers, clothiers and outfitters. The company is composed of Alfred Eaves, jeweller; S. G. Waldron, manufacturer; F. B. Drouin, manufacturer; J. T. Smith, bookkeeper; C. H. Fildes, traveller, and Arthur Drouin, traveller.

The bankrupt stock of George R. Blyth & Sons, dry goods merchants of Ottawa, who assigned some time ago, has been sold to Denis Murphy, M.P.P., of Ottawa, for 75 cents on the dollar cash. It is understood that Mr. Murphy acted for Blyth & Sons. The liabilities of the firm amounted to nearly \$200,000. The total assets as shown in the assignee's statement were \$226,908.22, of which nearly \$150,000 was in merchandise and plant. The building and land are valued at \$72,000. The creditors will get 83 cents on the dollar.

The M. B. Lee Co. has been formed at Winnipeg, with a capital of \$50,000, to carry on the business of wholesale and retail dealers and manufacturers of ladies' suits and clothing of every kind. M. B. Lee, F. W. Law, W. W. Birch, W. C. Law, and J. A. Campbell form the company. Heasley & Co., with a capital of \$10,000, has been organized in the same city, to buy, sell and deal in all manner of men's furnishings, and also all manner of goods, wares and merchandise. C. Mc. Green, E. A. Mott, T. H. Webb, R. H. Shanks, H. W. Whitla, and J. G. Hossack compose this company.

Commenting on the collapse of the rubber trust in the United States, its president having declared that it broke down because it maintained prices at a figure which stimulated competition, the formation of new companies, and the investment of new capital, the Gazette says: "The only trust which can live is that which gives the public value for its money, and the only trust which can do that is that which lives up to the fundamental idea of economy in production." In this connection it is announced that the republic of Bolivia has granted an immense concession of territory to an Anglo-American syndicate directed by Pierpont Morgan and Sir Martin Conway, to control the South American India rubber output.

New York hatters are booming light brown as the popular shade for autumn.

One of the largest shirt and collar manufacturers in Canada reports this the busiest season he has ever experienced. He has been unable to get a sufficient number of employées to fill his orders.

An advance in the price of linoleums and oilcloths is expected. There have already been advances in the United States, and it is stated on behalf of British manufacturers that at present prices they are not making a profit owing to the heavy advances of raw material.

That Lancashire does not relish being so largely dependent upon the United States for its supply of raw cotton is shown by the fact that leading representatives of the cotton manufacturing industry have resolved to form a British Cotton association, with the object of extending the cultivation of cotton in British colonies and protectorates. A committee was formed and empowered to send experts throughout the world to collect data on the improved methods of cotton cultivation, to acquire land for experimental stations, to establish plantations and to instruct natives in the methods of cotton culture, and to maintain cotton exchanges to facilitate buying, selling and transporting the crop.

Two merchants have been arrested in Boston for smuggling wool from Montreal. The mode of operation was to load a box car partially with bales of rags and partially with bales of wool. Recently a car of the Boston and Maine railway was seized when it was discovered that twenty-four bales, supposed to be rags and consigned to the Stoughton Woolen Mills, Boston, were wool and dutiable to the extent of 40 per cent., whereas there is no duty on rags. Two wool brokers, Frederick Barlow and Ruben Broomfield, were also arrested in connection with the seizure. The smuggled wool was sold at auction in accordance with the customs regulations and realized \$2,411. The case is now before the courts of the State of Vermont, and more seizures are looked for. The information was given by United States officers in Montreal. Similar cases of smuggling are said to have been carried on from Toronto.

Harvey L. Hewson, treasurer of the Oxford Manufacturing Co., of Nova Scotia, in a recent interview declared strongly in favor of an increased duty on woolens. He remarked that it is only 22 per cent. in Canada, while the rate in the United States is 110. The latter is simply prohibitive. If the American duty were 50 per cent. it ought to provide more than sufficient protection, indeed, if the American producers could not compete with foreign makers with that amount of protection, the country should look to foreigners entirely for its needs in that line. In view of the high duties paid by the American consumer on foreign woolens, our 22 per cent. looks very insignificant, and it is only in cases where specialties are manufactured that it is possible to meet foreign competition.

Several new and attractive lines of knit gloves have made their appearance in the fall and winter samples. Scotch plaids are prominent, and a variety of check designs, comprising every size from the smallest checks to some about half an inch square. Broad checked stripes running across the glove are among the new-comers. In several lines there is a variation in the pattern in the wrist, and the fingers and the body, of the glove. The wrists are frequently striped while the rest of the glove is patterned in checks or figures. The colors, however, being the same throughout. There is a tendency in the latest designs to get away from the neat effects that were so well liked during the past winter.



**BRANDON TWINE FACTORY.**

The following account of the process of manufacturing binding twine, as witnessed in the Brandon twine factory, and described in the Winnipeg Commercial, will be of interest. The factory, recently set in operation, after numerous delays incident to a new enterprise, contains 43 twine machines. There are three classes of machines and three departments of work.

**Preparatory Machinery.**—As the hemp is taken from the bales the rough ends are first dressed in the scutcher. Then it is carefully assorted and fed into the break breaker. This larger machine begins the preparation work on the fibre by combing and mixing. It comes from this breaker as a sliver, and is coiled in large cans. Six of these slivers are fed into the coarse spreader. In this machine the material is further combed and dressed and the six slivers become the size of one of the originals. In a similar manner the fine spreader, the draw frame, and the two finishers. It is then ready for the next class of machines.

**Spinning Jennies.**—There are thirty of these machines, each with two spindles. These spin the cord, that is, give it the necessary dressing and twist. Each of these thirty machines is capable of making something over 200 lbs. per day of ten hours. In them the cord is wound upon bobbins ready for the balling machines. These five machines take the twine from the bobbins and make it into balls, ready for the harvesting machines. From these ballers the twine is bagged, bound and taken to the work house.

**Testing.**—Every hour of the day samples are taken and tested as to strength, length, weight and the number of twists to the foot.

The power house contains two 75 horse-power boilers and a 100 horse-power Wheelock engine. In the storehouse there is nearly one hundred tons of Manilla and sisal. The Manilla was purchased mostly in London, Eng., and the sisal in Merida, Yucatan. Arrangements are completed for shipping the Manilla directly from Manilla to Brandon, by the western route, for the fall business.

Binding twine is made of various materials, hemp from the Philippine Islands, generally called Manilla, hemp from New Zealand, called New Zealand for short, and sisal are the principal fibres used. The hemp from Mauritius, from India and a short and harsh fibre known as Istle, are sometimes used in small quantities, but they deteriorate the quality of the twine. The Manilla hemp is the best fibre and forms the larger part of the best grades of twine. Pure Manilla is supposed to be made wholly of this Manilla twine, contains from 50 to 75 per cent. of the Manilla hemp and the balance of a cheaper fibre, generally sisal or New Zealand. The twine being made in Brandon factory is 80 per cent. Manilla and 20 per cent sisal. Sisal is not hemp, but is the fibre of a species of cactus, much like the well known century plant, only the leaves are much thicker and longer. This grows in Mexico, principally. The large leaves are passed through great rollers which crush out the pulp. The fibre is then washed and baled for export.

The factory employs at present about 35 hands, 15 of whom are women. John Dwyer, who has had charge of a similar factory in the United States is in charge. Under him are two experienced men from Ontario. All the rest are local employees. The starting of such a line of manufacture in the west, where twine is in such demand, is an important event. The first ball of twine turned out cost, says the president, laughingly, \$60,000. The second cost 60c. The ball weighs 5 pounds.

**TEXTILE FABRICS MADE OF WOOD PULP.**

The use of wood pulp as a material, which has had such important results in paper making as well as in other industrial arts, is now being extended to textile manufacture. A process of spinning cellulose tissues into yarn, the patented invention of Gustav Turk, manager of the cellulose works at Walsam-on-the-Rhine, and Dr. Carl Kellner, of Vienna, is being applied near Stettin, Germany. The process by which it is rendered possible to spin very short fibres of the pulp is a comparatively simple one, besides which there is a distinct advantage in the facility with which dyeing can be effected. Cheapness is the chief end attained, however, for the best wood pulp costs in Germany only one-third as much as ordinary cotton and the method of spinning is less expensive than that by which yarns are usually made. In answer to the objection that the minute length of the cellulose fibres will make the fabric insufficiently strong and that they are too thick, it is contended that for carpets, draperies, furniture covers, etc., coloring, pliability and cheapness are often considerations of greater importance than the strength and thinness of single threads; besides, in the case of wood pulp, the strength of the yarn can easily be increased by submitting it to chemical treatment; and, finally, if such short fibred yarns are used as welts in combination with cotton, linen or silk threads, as warp, every single fibre will be tied down at the least three times by the warp, and therefore the cloth will be almost as strong and durable as pure cotton and linen goods.—Kuhlow.

**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.

M. S. McKay, of Galt, has added two sets of carding machines to his factory equipment. They were purchased in Philadelphia.

The employees of the McSloy hair cloth factories of St. Catharines, and Niagara Falls, N.Y., had their annual picnic at McCalla's grove on June 21.

The Waterloo town council has granted the Waterloo knitting mills exemption from taxation for five years. The mills last year paid out \$18,000 in wages.

The picker in the power house next Hon. J. Haggart's roller mill, Perth, caused a fire recently, but it was overcome in the incipient stage, and small damage resulted.

Jas. H. Wylie has bought from Jas. Porritt the water wheel used by him in his woolen mill at Port Elmsley before it was destroyed by fire, and has had it removed to Almonte.

An incipient fire caused by spontaneous combustion occurred in the shoddy department of the Canada Woolen Co.'s mill at Hespeler last month. It was overcome by the fire appliances on the premises.

While John Moore, an employee of the Canada Woolen Mills at Hespeler, was taking down some wool on an elevator the cable broke, letting the elevator fall two stories. Moore sustained a scalp wound and a severe shaking up.

J. D. Powers, of Schuylerville, N.Y., has purchased the big pulp mill of the Fredenburg Falls Pulp Company, which will be a million dollar plant when completed. The pulp wood used will come largely from Canada.



Miss Sarah Leclere, who claimed damages from the Dominion Cotton Mills Company for having lost her left eye by being struck by a shuttle while she was working as a weaver in the company's mills, has been awarded \$1,500 damages by the court.

The court has ordered the mill and property of the Maritime Sulphite Fibre Company at Chatham, N.B., which has been so long in litigation, to be sold. Capitalists from both Great Britain and the United States have been looking over the property with a view to its purchase. It is hoped it will soon be in operation again.

The Auburn Woolen Co.'s mill at Peterboro' is rushed with orders. The carding and spinning department and the finishing room has had to work till 9 o'clock p.m. A new dressing machine of the latest pattern is being added. The mill is going more into the manufacture of worsted goods. James Burnett is superintendent.

The following items come from Magog: Fred Gagnor, boss mule spinner, has left the Magog mill and gone to Montmorency. H. Shaw, ring spinner, has gone to Moncton to take charge of ring spinning. Peter Duxbury, from Moncton, has arrived to take charge of mule and ring spinning. Jos. Amaioit has been promoted to the position of second hand of card room. T. Hughes has taken charge of the picker room. He has had an extensive experience in card and picker rooms, having worked in Yorkville, N.Y., also at the Mohawk and Shenandoah mills in Utica, and in the cotton and hosiery mills at Kingston, Ont. John Lumman, aged 17, caught his leg between two cylinders in the cotton mill and sustained serious injuries.

### THE EVOLUTION OF MACHINERY.

It cannot be said of any kind of machinery or machine tool that it has reached the point where improvement is impossible. New machinery and better tools are being constantly added to manufacturers' lists. They come and go with increasing persistence, and what is a time and labor saver to-day is being supplemented or supplanted without any regard to dates. Inventive genius knows no halt, and is in unbroken movement round the orb of industrial life. It cannot be boycotted, strangled, starved or sun dried. In speed, accuracy of work and simplicity of construction we have the ideal of inventive ambition. It is only by retrospect that we see the wide difference between the old and the new. No industry has been exempt from change or the spirit of progress that is brooding over everything. It presides at the loom and the forge, and in mine and mill. In cutting lumber and fashioning iron, in stamping dies and making spoons, and from the building of a bridge to the manufacture of a pill box, the use of improved machinery and tools is everywhere visible. The machinery industry is becoming one of the great potentials of trade, and in the exchange of the old for the new, we

have a business that is rounding out to large proportions. The manufacturer behind the times in the use of improved machinery travels a rocky road, not to fortune, but insolvency. Machinery is rapidly displacing hand labor, and it will go on doing so till the last spindle hums and the last wheel turns in the industrial world.

It would be well to remember in this connection, that as the man who handles a machine is the first to detect its shortcomings, in many cases he ought to be the best able to suggest improvements. What is wanted is more encouragement in this direction. Many machine users hold their peace in this matter, for the suspicion or knowledge they have that others would monopolize the benefits some of which at least he would be justly entitled to. A more generous appreciation of practical suggestions would bring its own reward. In some instances this obligation is being recognized and with good results. It would be well for all concerned if this practice was more common than it is.—Age of Steel.

### BIG WOOLEN MILLS FOR THE PACIFIC COAST.

Wool growers of New Zealand have formed an organization called the Australian-American Woolen Company, and will establish a big woolen mill on Puget Sound, Wash. Woolen cloth and material of many descriptions will be manufactured at the plant, and will be marketed in America and all over the world. The spokesman of the alleged company said: "The mill to be built will employ 1,000 hands at the start, and the force will be increased as the trade demands. Three of the ships of the line the wool growers' organization has now running to England will be used in handling the Sound trade. Arrangements have already been made for cargoes on the return trip to the islands, while coming over they will be loaded with the wool. By shipping direct, we will lessen the distance by a third, and save the amount of the several commissions required through the other channel. There is practically no manufacturing in the islands. The conditions and labor restrictions are almost prohibitive of manufacturing by reason of the high wages and short hours demanded."

—The American Woolen Company has decided to make a competitive exhibit of all its woolen products at the St. Louis world's fair. As it has 33 plants engaged in woolen and worsted weaving this means an impressive exhibit. The Bigelow-Lowell Carpet Company is trying to secure concerted action for an exhibit of American carpets and rugs.

**SPINNER.**—Young man, aged thirty, single, wants situation as spinner in a woolen mill. Has had experience in operation of a two-set mill. Address H. G., care of Canadian Journal of Fabrics, Toronto.

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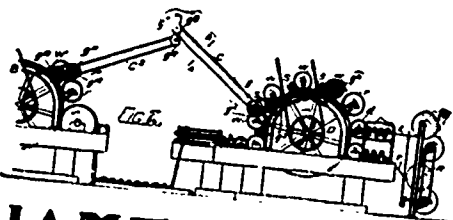
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In order to accommodate readers of The Canadian Journal of Fabrics, the publishers will be pleased to mail any book in the following list on receipt of the publisher's price, duty free. Books on technical and practical subjects, not in this list, can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

- Loom Fixing; a handbook for loom fixers working on plain and fancy worsteds and woolens; containing chapters on shuttles and hobbins, and their management; head motion; putting in warps; filling; adjusting and starting new looms; chain building, etc.; 104 pages, by Albert Ainley .....\$1 00
- Technology of Textile Design; explains the designing for all kinds of fabrics executed on the harness loom, by E. A. Posselt ..... 5 00
- Structure of Fibers, Yarns and Fabrics, the most important work on the structure of cotton, wool, silk, flax, carding, combing, drawing and spinning, as well as calculations for the manufacture of textile fabrics, by E. A. Posselt ..... 5 00
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- Wool Dyeing: an up-to-date book on the subject, by E. A. Posselt ..... 2 00
- Worrall's Directory of Cotton Spinners, Manufacturers, Dyers, Calico-printers and Bleachers of Lancashire, giving the mills of the British cotton district, with number of looms and spindles, products of the mills, cable addresses, etc .....\$2 00

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

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

CHEMICALS AND DYESTUFFS.

- Nothing new to report; market remains steady with few exceptions; glycerine has advanced 1/4c. per lb
- Bleaching powder .....\$ 2 25 to \$ 2 50
  - Bicarb. soda ..... 2 00 to 2 05
  - Sal. soda ..... 0 85 to 0 90
  - Carbolic acid, 1 lb. bottles ..... 0 40 to 0 50
  - Caustic soda, 60° ..... 2 35 to 2 60
  - Caustic soda, 70° ..... 2 60 to 2 85
  - Chlorate of potash ..... 0 10 to 0 11
  - Alum ..... 1 35 to 1 50
  - Copperas ..... 0 70 to 0 80
  - Sulphur flour ..... 1 70 to 2 00
  - Sulphur roll ..... 1 90 to 2 00
  - Sulphate of copper ..... 5 50 to 6 00
  - White sugar of lead ..... 0 07 to 0 08
  - Rich. potash ..... 0 7 1/2 to 0 08
  - Sumac, Sicily, per ton ..... 50 00 to 58 00
  - Soda ash, 48° to 58° ..... 1 30 to 1 40
  - Chip logwood ..... 1 90 to 2 00
  - Castor oil ..... 0 08 to 0 09
  - Cocanut oil ..... 0 10 to 0 11

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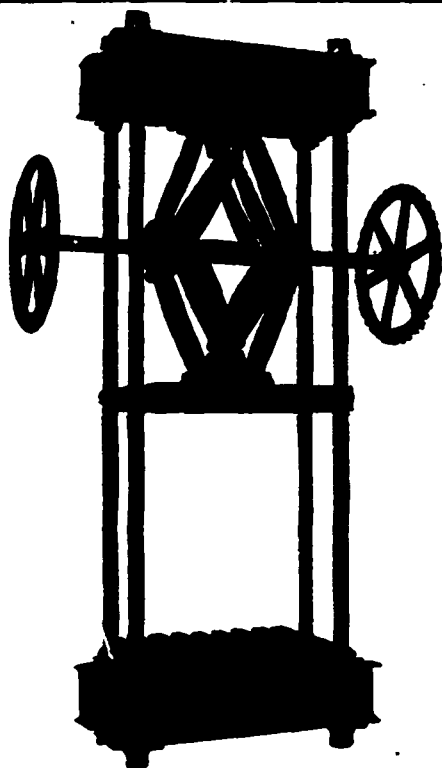
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—It is only a few years since cotton seed was a waste product. Now the seed from a ten million bale crop worth, to the planter, not less than \$30,000,000. Every part of the seed is utilized, and it is proposed to add to its value by utilizing the hulls for the manufacture of paper. A portion of the output of hulls is now used for fattening cattle, while cotton seed meal is used the world over as a cattle food. Large quantities are also used for fertilizers.

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—The most phenomenal case of nerve known on the American continent is reported from Wichita. A rug peddler called several times at a house and found the people away from home. At last he wrote and pinned this note on the door: "Madame—kindly remain at home to-morrow forenoon I want to sell you a rug."

—Manufacturing is the greatest producer of wealth known to civilized people. Why? Because it calls for the employment of the highest intelligence and skill to convert crude material into objects of daily use and consumption, and because, in the process of such conversion the raw products are enormously increased in value. For instance, a pound of raw cotton, worth only a few cents, can be multiplied in value many times by the process of manufacture. Thus it is that a manufacturing community is vastly richer in accumulated wealth than a community that only produces crude articles.

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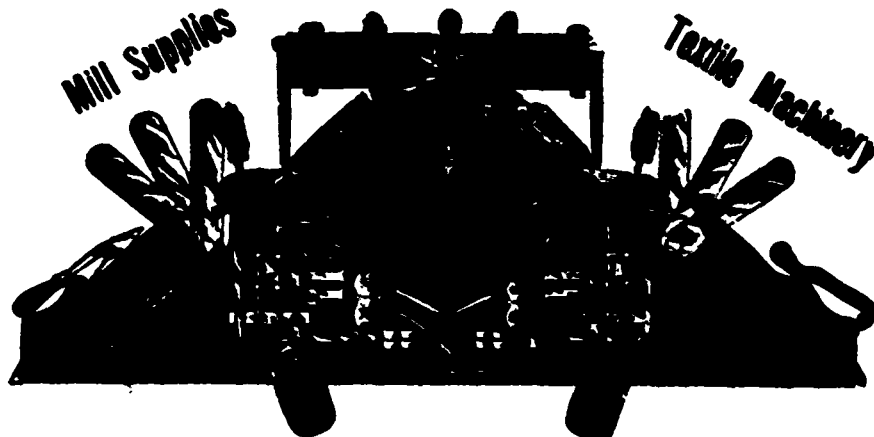
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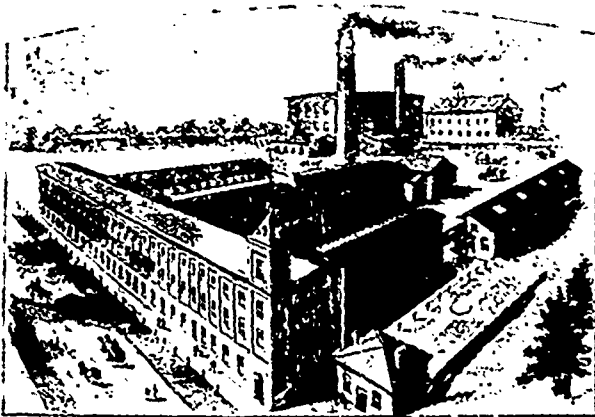
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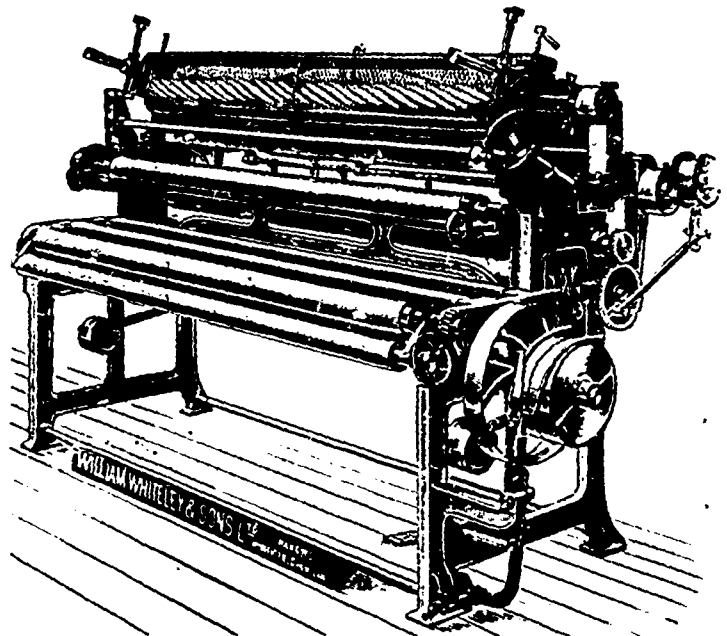
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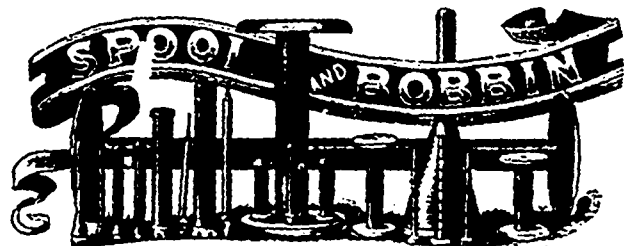
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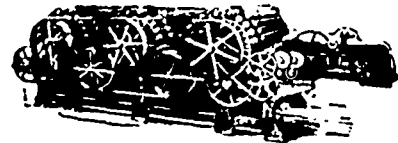
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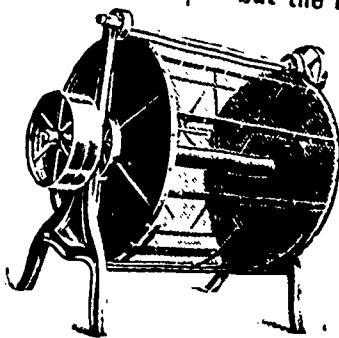
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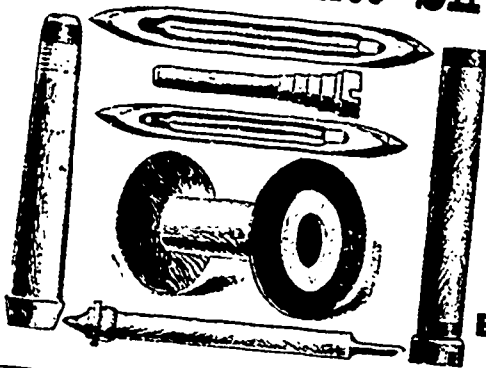
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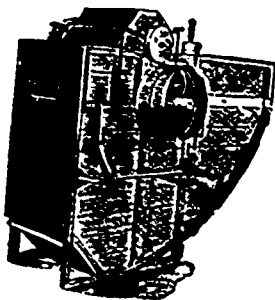


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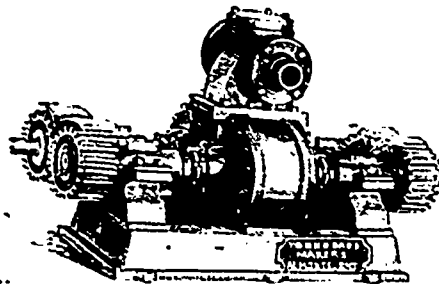
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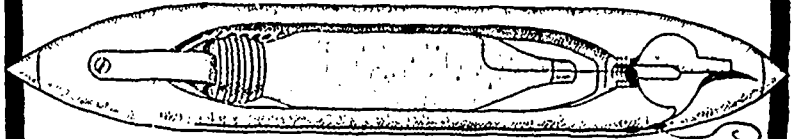
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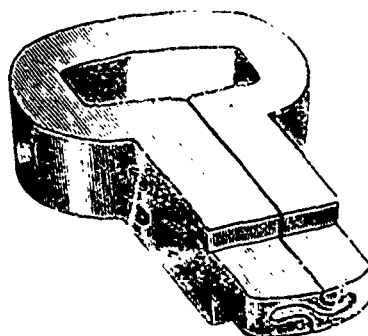
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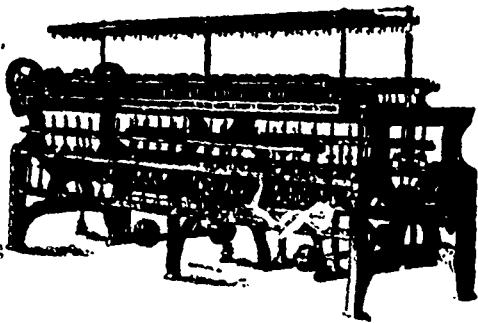
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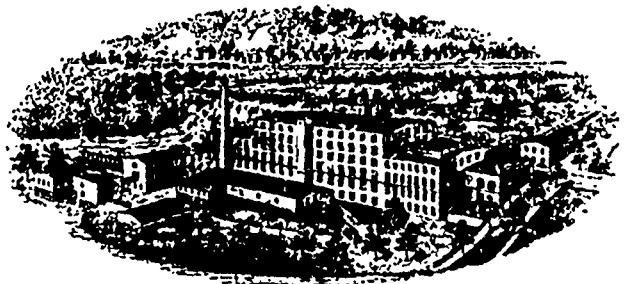
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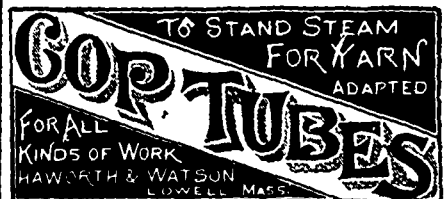
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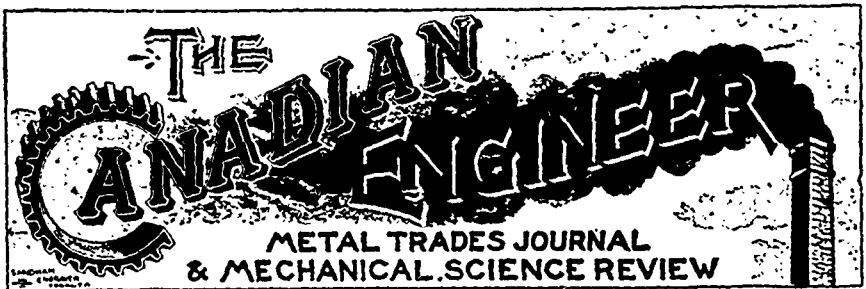
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