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CANADIAN Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XX.

TORONTO AND MONTREAL, JANUARY, 1903.

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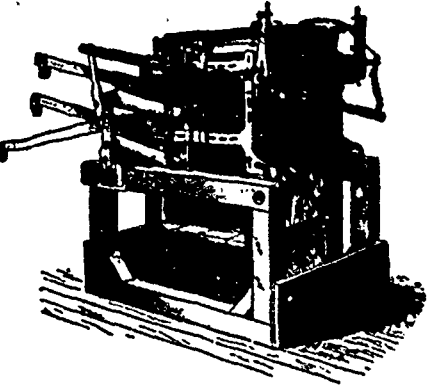
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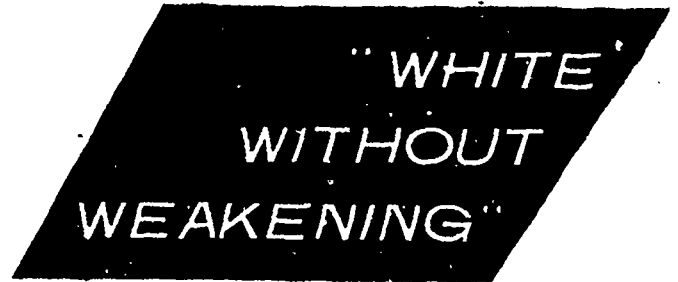
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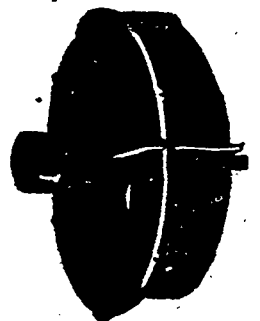
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THE JOURNAL OF THE Textile Trades of Canada.

Vol. XX.

TORONTO AND MONTREAL, JANUARY, 1903.

No. 1

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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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SUBSTITUTES FOR WOOL.

In this issue will be found an article prepared for the Textile World, commenting very severely on the Grosvenor Shoddy Bill, now under consideration in the United States. The writer perhaps overdraws the picture of the difficulties of carrying out the provisions of the bill should it become law, but that there will be difficulties is beyond question. Nevertheless the extent to which shoddy and other substitutes have taken the place of pure wool calls for some protection for the

public, and an act providing that people shall know what they are purchasing is in the right direction.

In England, the effect of wool substitutes in reducing the price of wool is being severely felt. At a recent meeting of sheep owners, Mr. Mansell, of Shrewsbury, pointed it out. To the farmer the decline is incomprehensible, in view of the continually increasing population. Foreign supplies do not account for it. Mr. Mansell contends that the wool market has been destroyed to the producer simply by the extent to which it has been superseded in the manufacture of so-called woolen goods by other raw materials of less value. In the heavy woolen district of Yorkshire there are dozens of manufacturers who never buy a single bale of raw wool, and yet are known and acknowledged as influential manufacturers of woolen goods. In the United States, owing to the heavy tariff rate on wool, the situation is still worse. In 1900, 71,000,000 pounds of shoddy were used, displacing 222,000,000 pounds of wool, or equal to 72 per cent. of all the wool in the United States in that year. The shoddy used in that year was equal to the product of 42,990,000 of the 61,415,000 sheep in the United States. Besides the old material used over once or oftener, cotton is mixed with wool to an increased extent.

The passing of such an act will not, nor is it intended it should stop, the use of substitutes in the manufacture of woolen goods. Many persons are quite content to wear cloth made from shoddy. The object of the law is to prevent the public being deceived, and to that extent we cannot help regarding the proposed act as a good one.

—As an evidence of what technical education and the patient application of scientific methods to the industrial arts can accomplish, the reports issued by a German chemical society on the operation of chemical companies in Germany, for 1901, are very instructive. From these reports it appears that in the midst of an almost unparalleled depression in general trade in Germany, 120 chemical manufacturing companies there, having a paid-up capital of £17,500,000, distributed £2,168,000 in dividends. Makers of alkalis and acids declared

dividends that averaged 11.92 per cent., while aniline color makers paid an average of 20.84 per cent. in dividends. Chemical factories in other lines averaged over 15 per cent. Could there be any more striking testimony to the value of that technical training which has brought Germany to the front in the chemical trades? It may be truthfully said that but for these practical results of technical education, the German Empire would to-day be in a condition of financial and commercial collapse. The moral should not be lost on educationists and public men in Canada.

—In view of the fact that large quantities of flax straw are burned up or allowed to go to waste in Manitoba every year, the report that the Pettibone Cataract Paper Co., of Niagara Falls, N.Y., are successfully working up waste flax straw and cotton seed husks into special kinds of paper, should be of interest to flax growers in Canada. Growing flax for linseed oil and selling the straw for paper and other purposes should have a future in a land so well suited to flax growing as Canada.

MAKING HARD AND SOFT SOAPS.

J A T in *Fibre and Fabric*, replying to an enquiry as to how palm oil, olive oil and resin soaps are made, gives a general idea of how to make soap by cold process Palm oil soap. Take 100 lbs palm oil, 40 lbs. cotton seed oil, 20 lbs, 98 per cent, powdered caustic soda, 90 lbs, or 9 gallons water (soft) This will make about 280 lbs. soap. Palm oil alone can be used, but it must be bleached. If not, the color is high. Take your caustic soda, dissolve in 9 gallons of soft water; allow to cool to a temperature of 80 degrees F. Now melt 100 lbs. palm oil and 40 lbs. cotton seed oil (or same amount of tallow). Let stand to temperature of 120 degrees F. The lye is now poured into oil in a slow and steady stream and stirred with wooden stirrer slowly all the time until thoroughly mixed. Do not stir too long or the mixture is liable to separate. I cannot give any stated time as to how long to stir it, as it varies with the weather, sometimes 10 minutes and sometimes 15, but will say from 12 to 15 minutes will be quite enough, though experience will teach after you have made one or two batches and noted particulars. When mixture is completed, pour into a large box, having previously dampened the sides with water or whitewash to prevent soap from sticking. Put box away in warm place for three or four days; cover up well with blankets. Do not use soap immediately, but cut into bars and now leave for two weeks or so in a warm place, and it will be found of benefit, as its lathering and cleaning properties will be much improved by so doing. If soap when examined is not well combined with lye, is streaky with layers of grease, it has not been well stirred or stirred too long, which has made it separate. But if this happens, cut it into small pieces, put back into pan with 7 gallons water, and bring to a boil. Now pour into box and let stand three or four days well covered up in a warm place, as before stated, it will then be found to be O.K. Now taste your soap. If found very sharp to taste and yet well combined,

enough oil or tallow has not been used. If mild and very greasy, too much has been used. It can in this case also be boiled over again and with a slight addition of tallow or lye as needed. Good finishing and sizing soap is made as follows. Take 45 lbs. pure caustic potash, add same to 4½ gallons water; then allow your lye to cool. Take now 200 lbs. of clean melted white tallow, allow to cool to temperature of 120 F.; take your lye and pour into tallow in a slow and steady stream, stir constantly for three or four minutes till thoroughly mixed; now let remain in a warm place a few days wrapped up in blankets to complete saponification. This produces a potash soft soap, not too strong and suitable for scouring or to use as a sizing soap. It will not hurt the most delicate shades as a sizing soap; it could not be better, as it retains lots of glycerine, which is contained in clean tallow, and as potash has great lubricating and softening qualities, for this reason a potash soap will allow much more sizing to be used than when a soda soap is used. Would like to hear from some other subscribers on same question.

A TALK ON WOOL.

(Concluded from last issue.)

In introducing the technical part of his subject, Mr. Algie showed a series of samples of wool, kindly furnished by Wilson Bros., wool dealers of Toronto, to illustrate his remarks on the varying character of wool as affected by climate. These samples represented all varieties and prices of wool from the cashmere wool of India worth \$1.50 a pound, to the cheap carpet wools of the east, and the low grades of Canadian wool at 6 to 7c. a pound. The wool of Cashmere stood alone not only in respect of its price as raw material, but in the values it represented when manufactured by the hand spinning and weaving processes of the natives, for such was the slowness of the work and the care required in making real Cashmere goods that a Cashmere shawl represented the life work of a native.

The influence of climate on wool was remarkable. One would at first think that fine merino wool could be grown as well in an arctic climate as any other, provided the sheep itself would stand the cold, and that a sheep bearing the long lustrous wool of the north temperate zones would produce the same wool if reared in the sub-tropics, but such was not the case. Take a merino sheep from Australia—that country which surpassed Spain in the breeding of merino sheep—and bring it to Canada and in a few years the fine short staple will become longer and coarser, and approach the character of our native sheep. On the other hand if a Leicester or Cotswold sheep is taken to the Southern States or to Australia, its wool will gradually become harsh, and lose its silky lustre. Each zone, therefore, seems to have a specific effect in producing wool adapted to the climatic needs of the human wearers of wool, as well as of the sheep themselves. The character of wool was also affected in no small degree by the care of the sheep as well as by climate. East Indian and other varieties of Asiatic wools were nearly always dry and harsh because the sheep farmers paid little attention to the sheep. Owing to these variations in wool it was possible by mixtures and by manipulation to produce a greater variety of cloths and adapt them to more varied purposes in the arts and trades than was possible of any single textile fibre.

Another special advantage which wool had over cotton and other vegetable fibres was its property, of felting. When a fibre of wool was examined under a magnifying glass it was found to have a surface, not smooth, as cotton, silk or linen, but to be full of serrations or nicks so that a longitudinal section would look like the edge of a saw. These serrations, when wool fibres were interlaced in a thread, caused them to interlock and fit closer and closer together when cloth or threads were worked under heat and moisture, and so produced the felting which wool alone is susceptible of. The felting property of wool enabled the woolen manufacturer to apply wool cloth to a variety of purposes in arts and manufactures, which could be served by no other cloth. The manufacturer of woolen goods must study the peculiarities of all kinds of wool in order to get the best results in making cloth for a specific purpose and for a special market. The lecturer noted that there was a marked difference between the quality of wool sheared from the living animal and that from the dead sheep, "dead" wool being poor and weak. He then referred to shoddy and mungo. The former might be absolutely pure wool, inasmuch as when properly made it consisted of wool fibre from cloth cuttings, garments and rags that had previously been woven or knitted, and was chiefly altered in the process of remanufacture by being shorter in the staple, a process that would tend to result in a weaker thread when used by itself. Mungo might be termed a shoddy from shoddy, and contained more dirt and refuse. There was an outcry against shoddy goods, but it must be remembered that the manufacturer made shoddy goods from necessity and not from choice. The cry from the dealers, and to a certain extent from the consuming public, was "give us something cheap, cheap!" and it was impossible to appease this clamor except by the use of shoddy and cotton.

He then sketched the progress of machinery in woolen manufacture. By the old spinning wheel a day's work was 3 lbs. of yarn; now one man would turn out more than 500 hand spinners by operating a spinning mule which had no heart to break and no muscles to tire, and which could spin a finer, even count of yarn than ever hand could spin. The great inventions applied to woolen manufacturing were things accomplished almost in a generation. He himself remembered the introduction of the combing machines of Lister and Noble—machines that were almost human in the way they manipulated the fibres. And yet while present day inventions were pretty sure to reap a rich reward for any good improvement in textile machinery the pioneers in textile inventions went to their graves unrewarded and unappreciated. Hargreaves, Arkwright, Lee and Cartwright all failed to get any financial benefits from their inventions, and all suffered more or less from the hand-weavers and spinners who thought their trades would be ruined by these inventions. While Hargreave's wife was sick his house was burnt down, and they were indebted to the charity of Quakers for shelter. The workmen who visited their wrath on these inventors could not be altogether blamed, as they acted according to their light—or darkness. The development of textile machinery in recent years was marvelous, for the present day machinery—such for instance as the Northrop loom and the automatic knitting machines, which would knit 100,000 stitches a minute—were as far ahead of the first machines of their class as these early machines were ahead of the hand looms and hand spinning wheels.

He then referred to the great advance which the British people had made in textile manufacturing by specialization. There large aggregations of capital and labor aimed at

excelling in one particular line. One firm confined itself to scouring, another to making tops, another to spinning, a fourth to weaving, a fifth to dyeing, and another to finishing. A result of this specializing was that a sort of inherited skill was acquired through generations of work upon, and study of, one single process, and hence we find the Mother Country a leader of the world in textile manufacturing. Until Canadian woolen manufacturers learned this lesson, and ceased to attempt to require perfection in carrying out all processes under one roof, they could not hope to compete with British, German and French manufacturers on equal terms. There was no reason, however, why Canadian woolen manufacturers should not by adopting English principles lead in the woolen trade of this continent, because in addition to the native skill and industry we had excellent raw material and, what was of great importance, vast undeveloped motive power in the Niagara, St. Lawrence and other rivers which could be electrically distributed, and by which millions of spindles and hundreds of thousands of looms could be operated more cheaply than anywhere else in the world. This was the zone that produced men and women of the highest type of intelligence and endurance, and Canadians were second to none in those qualities that made successful manufacturers. By the evolution of machinery and by other causes the earth grows smaller and mankind grows larger, and there was no predicting what might be attained in this country.

In answer to questions the lecturer explained the different grades of Canadian wool, such as Leicesters, Cotswolds, Shropshire downs, Southdowns, etc., and explained how that the temptation to raise sheep primarily for their mutton and not for their wool had altered the general character of our provincial wools. In lustre wools or combing wools the climate and soil of Canada produced a wool that could not be excelled for strength and brightness. In answer to other questions Mr. Algie expressed the belief that a great trade might be worked up with the British colonies, such as South Africa and Australia from which we could take increased quantities of merino wool and other raw materials sending them in exchange our manufactured goods. Our purchases of these wools, however, would for a long time to come be made in the main through the London market, the world's great centre of the raw wool trade.

A hearty vote of thanks was passed to the lecturer

SPINNING AND TWISTING.

The Somerset Manufacturing Company, of Providence, is illustrating a new system of spinning and twisting cotton, wool, flax and other material. In the general system the production is controlled by the speed of the travelers, and the outside limit of speed that has been found to work satisfactorily is 10,000 revolutions per minute, while with this ring the guides that take the place of the travelers are fixtures on top of the ring, and the ring will run equally as well at 18,000 revolutions per minute as 10,000 revolutions, it is claimed, and that it is only a matter of what the rest of the frame will stand. The company has a sample frame running, spinning number 50 yarn. The front roll, running 120 revolutions per minute, where the highest speed called for by the present system is 90 revolutions per minute, and all the experts that have seen it say that although it is giving an increase in production of about 33 per cent., it is running better than any other spinning, on the same number of yarn.—Textile Manufacturers' Journal.

Personal

Thomas C. Watkins, the oldest dry goods merchant in Hamilton, died January 8, aged 84.

Alfred Way, of Carleton Place, has gone to Renfrew, to take a position in the Logan woolen mills.

C. E. Gledhill, of Montreal, has gone to Hespeler, Ont., to take charge of the finishing in the woolen mill there.

Geo. Fligg, late of the Emsdale woolen mill, Almonte, has removed to Hespeler, his native town, where he has secured a situation in the woolen mill.

Miss M. Desjardins, torewoman in the hosiery department of the Anchor knitting mill, Almonte, who has been laid up with typhoid fever for some time, is now convalescent.

W. H. McKibbin, representing Evan Arthur Leigh (successor to E. A. Leigh & Co.), importer of cotton, woolen and worsted machinery, Boston, visited Ontario and Quebec last month.

Jas. Fatou, who died at Toronto on December 29th, was at one time engaged in sheep raising in Australia on an extensive scale, having operated one of the largest farms in the colony. After coming to Canada he farmed near Beamsville for thirty years. He travelled a great deal, and had lived in many countries of the world.

John McKay, who died recently at Bowmanville, at one time carried on the knitting works at Dundas, in the mill now owned by Kerr & Co., which he bought from James Coleman. After he left Dundas he went to Chatham, and then to Bowmanville, where he carried on the Caledonia mill for the manufacture of pot and pearl barley, split peas and buckwheat flour, which he exported to Great Britain and the West Indies, building up a large business and amassing wealth.

Arthur S. Green succeeds the late Professor Hummel as instructor in the dyeing department of the Yorkshire College, Leeds, Eng. He is a Fellow of the Institute of Chemistry, a Fellow of the Chemical Society, a member of the German Chemical Society, and other societies. He is 40 years old, and was educated at University College, London, where he won two gold medals in chemistry. He was for nine years with Brooke, Simpson & Spiller, London, in research work, but recently in private practice. He published a number of treatises on colors, and discovered the Primuline series of new coloring matters, as well as the method of producing fast colors on fabrics now extensively used under the name of the diazotizing process.

A. L. Cochrane, who has been manager for the Auburn Woolen Co. at Peterboro, for the past five months, closed his engagement on Dec. 31st, and will visit friends in Montreal and Boston before seeking a new position. Wm. Carter, late boss fuller for the Excelsior woolen mills, Montreal, and formerly with the Auburn Woolen Co., has taken charge of the fulling and wet finishing for the Canada Woolen Co. in their mill at Hespeler, Ont. Michael Welsh, boss spinner for the Auburn Woolen Co. for the past 17 years, closed his duties with them a few days ago, and has accepted a position in Providence, R.I. He is succeeded by John Bain, who has been second hand of the same department about 12 years, the position as second hand being filled by Thomas Kemp.

LITERARY NOTES.

The initial number for 1903 of the Textile Manufacturers' Journal, New York, is a special anniversary number, containing about 150 pages. It is claimed by the publishers to be the greatest achievement ever attempted in textile journalism. An important feature is the publication of a number of articles reviewing the condition of textile manufactures for the year 1902, by experts in the business. Another is a chronological statement of the principal happenings in textile industries in the United States for the year. The number is very creditably got up and contains much matter of interest to those in the trade.

The Dry Goods Economist, of New York, whose weekly issues in the past have been remarkable for accuracy and fullness of information on the dry goods and allied trades, has essayed a noteworthy step in advance by issuing three times a week, each number containing over 30 pages.

The January number of the Canadian Magazine contains the first of a series of articles on the War of 1812, by James Hannay, whose recent work on this subject was favorably reviewed by the press. John Riddington gives a graphic account, illustrated, of the recent Doukhobor pilgrimage in Manitoba, and there is an instructive sketch of Marconi's wireless telegraph station at Glace Bay. An appreciative sketch is given of J. S. Willison, late editor of The Globe, and editor of the new independent daily about to be launched in Toronto.

The Century Magazine for January has the continuation of Justin H. Smith's papers on the American Revolution, this instalment dealing with Arnold's battles in and with the wilderness. Admirers of Poe will be attracted by some striking correspondence between the poet and Chivers in this number. Canadian readers will be interested in an account of the American invasion of the Canadian West, written by Agnes Laut, author of "Lords of the North."

—The Puritan knitting mill, owned by Gordon, Mackay & Co., wholesale dry goods, Toronto, is this month being moved from Alton to Toronto. The mill is being located in the building formerly occupied by Seamans, Kent & Co., King street subway. It will be operated by steam, and at present has about a dozen machines for making ladies' and children's underwear. Other machinery is to be added. W. C. Warren, late of the Chas. Turnbull Co., Galt, is superintendent.

Grass twine goods are steadily making their way. On November 15 a special train of forty cars left St. Paul, carrying 10,000 rolls of Crex carpets and a great variety of Crex furniture and other products of the American Grass Twine Company, for distribution throughout the Eastern States. The train was run as a special from St. Paul to New York, making stops at all important points. At Elkhart, Ind., 1,400 people were at the station to meet it, and large gatherings were also collected at other cities. The train was covered from the engine to the rear car with banners advertising the products of the American Grass Twine Company. One of the finest drawing room coaches of the Northwestern Railway was used as a display car, the floor being covered with Crex carpets, straw mattings and art squares, while it was furnished with Crex chairs, tables and other products. Large orders were recorded from the trade at various stopping places. The train was also on exhibition after its arrival in New York.

Textile Design

WOOLEN PANTING.

28 ends per inch; 70s reed, four in a reed; 81 picks per inch; 64 inches in reed; 56 inches wide finished. Finished weight 26 ounces.

1 thread twist.

8 threads white.

Warp 2/8s worsted.

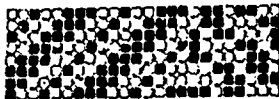
1 thread twist.

14 threads white.

Filling.

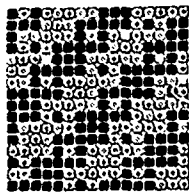
9 skeins woolen dark gray.

Draft.—1, 2, 8, 4, 5, 6, 7, 8, 1, 2, 3, 4, 5, 6, 7, 8, 4, 7, 6, 1, 8, 3, 2, 5.



—Wool and Cotton Reporter.

MELTON TROUSERING.



Complete Weave.
Repeat 16 x 16.

Warp.—4,280 ends, 16 harness straight draw.

Reed.—10½ x 6 = 69 inches wide.

Dress:—

2 ends, 2/56s worsted, red, twisted with 2/50s cotton, white.

8 ends, 2-ply, 5-run twist woolen, black and pearl.

8 ends, 2/40s worsted, black.

6 end, 2-ply, 5-run twist woolen, black and pearl.

2 ends, 2/56s worsted, black, twisted with 2/50s cotton, white.

6 ends, 2/40s worsted, black.

32 ends repeat of dressing.

Filling:—95 picks per inch, all 2/36s worsted, black.

Finish:—Worsted melton finish; scour well, full slightly, clip on shear; 56 inches finished width.

MUSKRAT FUR.

Formerly muskrat fur was largely used as a substitute for beaver in hat making, forming a cheap and fairly satisfactory imitation. Owing to its scarcity in the London market it was then of much greater value than at present, selling for 40 or 50 cents per skin, even equaling the value of mink at times. The general adoption of the silk hat resulted in a great decrease in the demand, and the price fell to as low as six or seven cents per skin, and trapping was of little profit. During the last sixty years muskrat skins have been used principally as dressed fur, and prepared in imitation of the more highly prized beaver, otter and fur seal. It is about the best of all the cheap furs on the market. The black pelts are marketed principally in Russia, where they are used for coat linings, but many are used in England, France and America for cloaks, trimmings, gloves, etc. The price of No. 1 black skins at the last London sale averaged 1s. 3d.; in 1891 it was 1s. 7d., while in 1875 it was something over 3s. The lighter ones fetch about 7d. each. Two or three decades ago quantities of muskrat skins were plucked

and dyed to imitate fur seal, the resulting article readily deceiving the uninitiated. While the fur is soft and short, it is not as thick as that of the fur seal, and the leather is much heavier and not sufficiently strong to permit its being scraped to a suitable thinness. After a few weeks' wear the fur becomes matted down, being less elastic than seal fur. During the seventies the use of muskrats for this purpose was very extensive, especially in Europe, thus providing a large market for this easily procured fur. This substitution injured the market for fur seal, persons hesitating about paying \$200 for a fur seal garment when a fairly good imitation was obtainable for one-fifth that amount. The imitation, however, was generally unsatisfactory to the trade, and on the introduction of electric seal, made from the coney, the use of muskrat fur for this purpose was generally abandoned, except for small articles, as gloves, caps, etc. Muskrat fur is used more extensively in Europe than in America, the Russians and Germans being especially large consumers. It is employed in making gloves, collars, caps, capes, muffs, trimmings, hangings, etc., and is made up either natural, plucked, plucked and pointed, or plucked and dyed black or various shades of brown. Large quantities are used as linings for overcoats and long wraps, from forty to sixty being necessary for each garment. Sometimes the under parts are used separately for this purpose, the natural white color being quite effective. The skins of young animals are especially suited for linings. The unplucked skins are frequently dyed to imitate mink, and sold as Alaska mink, water mink, or black mink.

—It is announced that Geo. H. Hees, Son & Co., will start a lace curtain factory in Toronto. They will erect a building 55 by 100, five stories high, adjoining their present window shade factory.

FABRIC ITEMS.

The Canadian agent of a British linen firm states that prices are exceptionally firm.

Paper spools are likely to come into use as the result of experiments made at Willimantic, Ct.

The Canadian Colored Cotton Co. has declared a quarterly dividend of 1 per cent. payable January 15.

Plain stuffs have the demand for spring dress goods. Homespuns, friezes and broadcloths are popular.

The Cassella Color Co. has issued a bulletin describing its Anthracine Chrome Brown D, with samples of its dyeings upon wool.

There is a great shortage in pins. Canada has only one factory, at Galt, and it cannot supply the wholesale houses fast enough.

Overcoatings for next year's heavyweight season are 10 per cent. higher in the States and other heavyweight goods are expected to show similar advances.

The vessels engaged in the Canadian sealing trade report a most disastrous season. One of the schooners only gathered 79 skins in a hunt that lasted from January.

There is at present no market and no price for binder twine. Manufacturers will not commit themselves to large contracts. Some priceless contracts are being made.

Laces, embroideries, ribbons, and all sorts of hat and dress trimmings have received rather more attention from Canadian buyers visiting the foreign markets than usual this year.

The sample rooms of John Macdonald & Co., Toronto, and the stocks of D. & J. Patterson, tailors and — Seely, civil and military tailor, were damaged by a fire at St. John, N.B., on Dec. 30.

The silk production in France in 1901 amounted to \$106,150,000, of which \$84,823,500 is to the credit of the city of Lyons. Silk exports were \$32,495,126, England being the largest purchaser.

The Dry Goods Review tells of a new waterproof cloth used in making the Sukram umbrella, by a factory in Montreal, which obviates the unpleasantness of carrying a wet umbrella into the house.

Hon. S. N. Parent, premier of Quebec, has been asked by the Quebec branch of the Canadian Manufacturers' Association to have appointed a representative in London, England, to handle their samples.

There are 15,000,000 acres of land along the banks of the Nile in Egypt suitable for cotton-growing, but there are no hands to work them. Their being brought into cultivation would make Egypt prosperous.

Silk manufacturers in Lyons are fairly busy, says an exchange, but prices are not satisfactory. Muslin is giving most employment to the looms. Taffetas of all kinds find a market in plain goods, stripes, checks and plaids.

The wet weather of last summer was the cause of a great demand for rain-proof goods. The agent for Canada of the Standard Mackintosh Company reports an increase in sales of nearly 50 per cent. this year compared with last.

J. C. G. Brown, representative of the New England Dressed Meat and Wool Company, of Boston, has been through Eastern Ontario in search of lambs, and has succeeded in securing about 20,000. These were shipped to Boston.

A large number of sheep died of starvation while being transported by train from the drought-stricken region of Yea, New South Wales. In one compartment the live animals were seen greedily cropping the wool off the backs of the dead ones.

The Association of German Wool Combers and Spinners has addressed a protest to the Reichstag against the adoption of the Tariff Bill en bloc. It points out that the adoption of the wool tariffs will possibly involve in ruin the whole German woolen industry.

A New York dyeing concern which operates one of the largest works in the world, is in communication with the president of the Sydney, N.S., Board of Trade as to establishing works there. A Boston firm is also enquiring as to the prospects for a large departmental store at Sydney.

The Kidderminster Shuttle contains a letter from W. W. Naylor, a Kidder boy now in Toronto. Speaking of a recent visit he made to New York, Philadelphia and Atlantic City, he says: "I went through Schofield & Mason's carpet manufactory, in Philadelphia, and met dozens of 'Kidly wavers.' Saw creelers making 30s. instead of 8s. or 9s. per week, as in Kidderminster. Looms run faster and better pay all round."

There is a great scarcity of raw rubber in those parts of South America from which the greatest part of the supply has hitherto been obtained. Balata, from which gutta percha is made, is however abundant. There is every prospect of an advance in the price of rubber goods, including garments, hose and belting, but the makers of rubber footwear do not meet till the first of March.

A silk 36 inches wide is in great demand on the part of large retailers and cutters, and it is quite likely that this change from narrow to wide silks will result in the elimination of small organizations not in a position financially to reorganize and compete with manufacturers who are introducing wide looms and other up-to-date methods.

J. D. Brown, Dundalk, has returned from his first fur buying trip. He paid out \$1,300 in the vicinity of Lake Temiskaming, and brought home a nice bunch of raw furs, mink, marten, fisher and others. Furs have recently made a good advance in price. Mr. Brown has taken the consignment to New York. He has arranged to meet the trappers once a month at stated points.

The drought has driven Australian sheep raisers to all sorts of expedients to keep their stock alive. In Queensland one squatter has chopped bulrushes into chaff, mixed them with molasses and water, and used them for food for his sheep with very satisfactory results. The serious effect of the drought is shown by the wool traffic on the railroads of New South Wales for the current year, which is only 346,000 bales, compared with 527,000 bales in 1901.

Plain cloths for dress goods have been in vogue in Berlin, but a sudden change has taken place and there is a run on patterned, multi-colored merchandise, and the business done in such fancies has been the largest for years. Black and white, blue and green, and various other prominent effects are the best sellers. Dot effects are promising, but may be forced into the background later by diamond and square designs.

Though cotton seamless bags have long been woven it has been found impracticable to weave jute and the coarser class of goods in that way. A loom has now been perfected, and is being built at Providence, R.I., by which jute bags, wool sacks, etc., may be woven seamless. As soon as a bag length is reached the loom automatically weaves the sides into each other, forming the bottom. Geo. Reid & Co., Toronto, are agents for Canada.

The hosiery most in demand at Bangkok is cotton under-vests of two qualities—the very cheapest and the very dearest; the medium qualities have no sale. The commonest vests come from Germany and from Spain principally, and are sold locally at about 3s. a dozen. These are tied in bundles of a dozen, while the better article is packed in cardboard boxes, containing a dozen vests each, and they in turn are enclosed in tin-lined cases. For the cheaper vests paper-lined cases are used.

Another valuable cargo of raw silk recently arrived at Vancouver from Japan by the steamship Empress of India, and was carried over the C.P.R. on its way to New York. It consisted of 540 tons, or 3,100 bales, valued at over \$2,000,000. It was the largest silk cargo ever brought across the Pacific, and was the second large shipment within six weeks. Two special trains carried it across the continent, one of them having also a car load of sealskins. Part of the trip was made at more than express speed. The goods were transferred to the New York Central at Prescott.

TEXTILE PATENTS.

The following patents relating to textiles have been issued in Canada since the publication of our last list:

Beading Machine. The United Machinery Co. of Canada, Montreal.

Curtain Fixture. Wm. E. Matthews, Ferndale, California.

- Window Shade Mechanism. Geo. M. Frampton, Pendleton, Indiana.
- Dress Shield. Emma M. Cowles, Milwaukee, Wis.
- Spool Holding Frame for Looms. P. D. Morton, J. e. Moyne, Ohio.
- Seam for Sewed Articles. Union Special Machine Co., Chicago, Ill. (4 patents.)
- Oxidizing Apparatus for the use of Dyers. Alex. N. Dubois, Philadelphia, Penn.
- Hammock. Z. L. Chadbourne, New Brighton, N.Y.
- Curtain Bracket. Louis A. Watts, Cincinnati, Ohio. (2 patents.)
- Mechanism for pulling off hair from hides. Andre Billand, Paris, France.
- Sud Iron. Barton C. Smith, Omaha, Nebraska.
- Mattress filling Machine. Karl Wessel, St. Paul, Minn.
- Machine for Folding and Wrapping. The Elliott Co., Boston, Mass.
- Paper Box. J. R. Van Wormer and E. J. Brainard, Atlanta, Georgia.
- Apparatus for Mercerizing. Katherine Weldon and S. H. Telford, Amsterdam, N.Y.
- Machine for Washing and Rinsing Animal Fibres such as Wool. Emile Maerteus, Providence, R.I.
- Drying Apparatus. Wolf Kronheim, Hanover, Germany.
- Method of Scouring, Bleaching, Dyeing and Mercerizing Piece Goods. C. L. Jackson and E. W. Hunt, Bolton, Lancaster, England.
- Umbrella. John A. Ekelund, Minneapolis, Minn.
- Suspender. R. L. Stewart, Winnipeg.
- Electric Sweating Robe. Andrew Phillips and Friar A. Mabee, St. Louis, Mo.
- Hat Sweatband Stamping and Embossing Press. H. C. Baron and S. D. Wohlfield, Manhattan, N.Y.
- Cloth Painting Machine. Wm. R. Hees, Detroit, Mich.
- Clothes Cabinet. Roderick Weir, Winnipeg.
- Glove. Robt. N. Carson, San Francisco.
- Collar in Stock Foundation. Aaron M. Weber, New York.
- Collar. Fannie E. McCathie, Port Jervis, N.Y.
- Tanning Liquor. Otto P. Amend, New York.
- Paper Bag Machine. Geo. C. Nelson, Cincinnati, Ohio.
- Electrically Operated Jacquard Mechanism for Looms. Jan Szczebanik, Vienna, Austria.
- Sewing Machine. Bachelor & Stenson, New York.
- Electrical Jacquards. La Societe des Inventions, Jan Szczebanick & Cie, Vienna, Austria.
- Garment. J. J. Walter and J. S. Brockert, Wapakoneta, Ohio.
- Mangle. David Lungair, West Bay City, Mich.
- Lacing Fastener. Julia P. Hughes, West Chester, Penn.
- Fastener (for corsets, etc.) L. W. Luellen, Boston, Mass.
- Garment Supporter. Henry C. Hine, New Britain, Conn.
- Seam for Sewed Articles. The Union Special Sewing Machine Co., Chicago.
- Suspender. C. R. Harris, Williamsport, Penn., and J. E. Austrian, New York.
- Process of Manufacturing Artificial Leather. Louis Gevaert-Naert, Bevere-lez-Andenarde, Belgium.
- Braiding Machine. Andrew V. Groupe, Philadelphia, Penn.
- Window Curtain Fixture. H. D. Schmid, McKee's Rocks, Penn.
- Lace and Cord Fasteners. Allen H. Smith, Tremont, La.
- Fly Button. N. M. Marshall, Portland, Maine.
- Glove. R. N. Carson, San Francisco.
- Carpet Renovator. J. S. Thurman, St. Louis, Mo. (2 patents.)
- Thread Winding Machine. The Foster Machine Co., Westfield, Mass.
- Winding Machine. T. H. Savary, Wilmington, Del.
- Winding Machine. Joseph H. Young, Northampton, Mass.
- Picking Machine. Ed. H. Blossom, St. Johnsbury, Vt.
- Mechanism for Making Rubber Shoes. H. J. Doughty, Providence, R.I.
- Dress Support and Waist Adjuster. H. E. Grebner, Beverly, Mass.
- Knitted Garment. Chas. E. Wakeman, Pontiac, Mich.
- Suspender. W. H. Johnson and Chas. Gordon, Winthrop, Mass.
- Skirt Holder. Clement L. Stephenson, New York.
- Fastening for Leggings. L. H. Morgan, Brampton, Ont.
- Skirt Protector. The Hensel, Collady Co., Philadelphia, Penn.
- Process of Treating Rawhide. Robt. Croasdale, Syracuse, N.Y.
- Thread Winding Machine. The Foster Machine Co., Westfield, Mass.
- Winding Machine. The Universal Winding Co., Portland, Maine.

Business Notes.

John McBean & Co., dry goods merchants, Georgetown, Ont., have made an assignment.

The Canada Furniture Co., which now operates 21 factories, is erecting at Waterloo, Ont., a new and up to date mattress factory.

Peterboro ratepayers have defeated a by-law to grant exemption to J. J. Turner & Sons, tent and awning makers. Now they talk of moving from Peterboro.

The Rapid City Power, Light and Woolen Manufacturing Co. are installing a power and light plant on the Little Saskatchewan river. A concrete dam will be put in

W. C. Rutledge, woolen manufacturer at Mildmay, Ont., whose assignment is announced, started business in May, 1901. Prior to that he had worked as foreman in several different mills. He opened up for himself without sufficient capital.

It has been rumored that the Seigel-Cooper Co., of New York, had determined to open a large departmental store in Toronto, and had secured an option on a property on Yonge street. They deny, however, that they have any such intention.

The Montreal Steam Laundry Co., a private partnership, whose affairs have been in the hands of the curator for some weeks past, are paying creditors 45 cents, cash.

S. A. Hoover, of the Commonwealth clothing house, Winnipeg, has purchased the Foulds' block on the corner of Main and Market streets for something like \$125,000, and will move into it.

The assignees having been unable to make satisfactory sale of stock on the M. B. Lee Company, ladies' tailors, Winnipeg, it has been decided to sell the goods by retail and by auction.

An offer of 40 cents on the dollar is being made by Holdengraber & Rosenburg, dealers in dry goods, clothing, etc., at Bathurst, N.B. They were burned out on November 27th, and cannot pay in full.

A by-law to authorize a loan of \$5,000 to the Lotteridge Bros. to enable them to purchase and put in operation the Brussels, Ont., woolen mills, was carried by 15 majority on the day of the municipal elections.

The will of the late J. Wesley Smith, dry goods merchant, Halifax, has been filed in the Probate Court. The estate is worth considerably over \$150,000. He made many bequests to religious and charitable institutions.

Among the enquiries at the Canadian Government office in London is one for capitalists who might be prepared to invest in a proposed manufactory for woollens or cottons in Canada; also by a Montreal house for addresses of English, German and Austrian manufacturers of silk for neckwear makers.

Charles A. Johnson, of Toronto, has entered an action against the Crompton Corset Company for \$5,000 for breach of contract, or, in the alternative, for \$5,000 for services in connection with the consolidation of various corset companies. He also claims expenses and disbursements in connection with these negotiations.

W. H. Storey & Son, of the Canada Glove Works, have just closed the largest year's business in their thirty-five years' history, says an Acton, Ont., paper. Orders have crowded in in such volume that the 200 employees have been unable to overtake them, and many have been refused. The business, both in the glove factory and the tannery, will be largely increased this year.

A proposition has been made to establish a binder twine factory at Berlin, Ont., by a Toronto man writing to L. J. Breithaupt. He points out that there is a good opening for such a factory and advocates the organization of a joint stock company with from \$50,000 to \$75,000 capital. A building could be put up at a cost of between \$5,000 and \$6,000, and the machinery necessary installed for \$8,000. This would equip a large factory.

Blanchard, Bentley & Co., of Truro, Nova Scotia, one of the largest wholesale and retail dry goods firms in the province, has gone into liquidation preparatory to the dissolution of partnership. The firm is composed of C. E. Bentley and C. M. Blanchard, who possess equal shares. It carried a stock of more than \$100,000 and until recently did a business of a quarter million annually. It had two large retail stores, in Truro and Sydney. It is well known that the partners have not pulled together for some years and the business as a consequence has been suffering. It is believed that Mr. Bentley will eventually continue the business in Truro, dropping the wholesale and expanding the retail to a greater extent than heretofore. Mr. Bentley secured his business training in St. John, working as clerk for

a number of years with Manchester, Robertson & Allison. Mr. Blanchard was also with a dry goods firm in St. John during the seventies.

MacFarland, Gray & Southgate, wholesale clothing manufacturers, Toronto, now in liquidation, have offered, through E. R. C. Clarkson, the assignee, 50 cents on the dollar to their creditors. The Master-in-Ordinary has appointed as inspectors of the estate to decide whether the offer should be accepted, the following: A. A. Alexander, A. T. Hatch, Mr. Davidson, W. Y. Telfer, E. Still and D. D. McIntosh. There is a good deal of opposition to allowing W. J. MacFarland and J. F. Gray, two of the partners, to rank on the estate for \$20,000 each. Without these two claims the estate would show a surplus, and, even with these claims admitted, the deficit is less than \$10,000. Those creditors who object to the claims advise that they be fought in the courts. Among the creditors are: W. J. MacFarland, Toronto, \$20,000; J. F. Gray, Toronto, \$20,000; Canada Woolen Mills, Toronto, \$2,317; John Dick, Toronto, \$1,270; Canadian Colored Cotton Mills, Montreal, \$14,301; Merchants' Cotton Company, Montreal, \$8,524; Colonial Bleaching & Printing Company, Montreal, \$2,741; Excelsior Woolen Mills, Montreal, \$557; Canada Woolen Mills Company, St. Hyacinthe, \$5,288; Penman Manufacturing Company, Paris, \$9,571; Schofield Woolen Mills, Oshawa, \$2,970; Ontario Blanket Company, Collingwood, \$853; Rosamond Woolen Mills, Almonte, \$821; A. W. McBride & Co., Streetsville, \$690; R. Forbes Co., Hespeler, \$500; Boston Gossamer Rubber Company, Hyde Park, Mass., \$1,332; Meridan Cotton Mills Company, Meridan, Mass., \$340; Rylands & Son, Manchester, \$5,630; Joseph Brooke & Co., Bradford, \$2,230; Law, Russell & Co., Bradford, \$1,032; G. I. Sidebottom, Manchester, \$1,502; W. H. & J. Barber, Holmsbridge, \$1,401; Charles Lemon & Co., Bradford, \$1,375; John Crowther & Sons, Melmsbridge, \$369.

The following textile companies have been incorporated: Canada Tape and Ribbon Printing Company; capital, \$5,000; head office, Montreal; F. C. Jamieson, Alex. W. Cochrane, and James L. Rankin, Montreal; Robert M. Jaffray, Galt, and Joshua T. Johnston, Toronto; for the purpose of printing on tape, ribbon or other material of labels to be attached to manufactured goods or for any other purpose for which printed labels may be used. The Ontario Felt Company; capital, \$40,000; head office, Dundas; John F. Morley, W. D. Morley, Margaret Morley and Annie Brown, Hamilton, and R. W. Morley, Toronto. E. & S. Currie; capital, \$250,000; head office, Toronto; to carry on the business of E. & S. Currie, neckwear manufacturers; J. S. Lovell, William Bain, Robert Gowans, E. W. McNeill and S. R. Wilkie, all of Toronto. The Ellis Manufacturing Company; capital, \$100,000; head office, Port Dover; to manufacture and deal in knitted or woven woolen and cotton goods; Jonathan Ellis, James Ellis and W. R. Liddy, Port Dover; H. Petrie, Toronto, and Robert Paxton, Otterville. The Imperial Underwear Company, Peterboro; capital, \$100,000; provisional directors, Albert Stratton, Adam Hall, R. H. Kells, F. J. Jameson and G. L. Hay. The Hart Manufacturing Company; capital, \$10,000; head office, Montreal; for the manufacturing, buying and selling of garments of all kinds, and all kinds of woolen, cotton, silk and other staple goods; Harris Vineberg, Lily Goldberg, his wife, Libbie Vineberg, Eva Vineberg and Malca Vineberg, Montreal; Alan J. Hart, Claud B. Hart and Lewis A. Hart, St. Lambert. The Dominion Wrapper Co.; capital, \$25,000; head office, Woodstock, N.B.; for the manufacture of clothing of all kinds; John Dickinson, J. C. Hartley, John T. LePage, Sarah A. Dickinson, Woodstock, and F. H. Hale, of Grafton.

DYEING WOOL FAST TO MILLING.

For the production of certain woolen fabrics, which in the course of manufacture have to pass through the process of milling or fulling, it is essential that in dyeing them dyes should be used producing shades capable of resisting the action of water and the alkaline agents used in the milling process. Fortunately, while many dyes are not suitable for this purpose, there are a large number whose affinity for the wool fibre is so considerable that goods dyed with them can be passed through the milling process without fear of bleeding or running or changing their shade in any way. It may not be without interest to wool dyers if we name a few of these, and indicate how they are dyed and what are the characters of the colors they will give:

Olive Yellow.

For 100 lbs. goods.

Prepare the dye-bath with
3 lbs. Anthracene Yellow GG,
10 lbs. Glauber's salt,
2 lbs. acetic acid.

Enter the goods into the bath at a lukewarm heat, turn them over, and then slowly heat to the boil, and work until the bath is exhausted of color; then add

3 lbs. fluoride of chrome,

and work at the boil for another half hour. This method of working is to be followed with all the anthracene dyes which will be named.

It may be pointed out that the degree or ease with which the bath is exhausted of dye depends largely upon the proportion of water which is used in making the dye-bath. The more water used, the more difficult it is to exhaust the bath; in such cases the addition of more acid and Glauber's salt increases the exhaustion of the bath.

Gold Yellow.

For 100 lbs. goods.

Prepare the dye-bath with
3 lbs. Anthracene Yellow BN,
10 lbs. Glauber's salt,
5 lbs. acetic acid,
1½ lbs. bichromate of potash.

Manipulate in the same manner as given above.

In using bichromate of potash for after-chroming, care must be taken to avoid excess, as this has the effect of oxidizing and destroying the dye, which then produces weak shades. This effect is perhaps more noticeable with the blues of the range of chrome-developing dyes than with other colors. By using Anthracene Yellow C in place of the BN brand, a denser orange and brighter shade of gold yellow is dyed.

Canary Yellow.

For 100 lbs. goods.

Prepare the dye-bath with
1 lb. Milling Yellow O,
10 lbs. Glauber's salt.

Work at the boil for one-half hour, then add 4 lbs. acetic acid, and work at the boil for another three-quarters to one hour.

Turquoise Blue.

For 100 lbs. goods.

Prepare the dye-bath with
1½ lbs. Thiocarmine R,
2 lbs. acetic acid.

Work at the boil for one-half hour, then add 10 lbs. bisulphate of soda, and work for one-half hour longer. By using 3 lbs. of the dye a fine shade of blue is dyed.

Full Red.

For 100 lbs. goods.

Prepare the dye-bath with
3 lbs. Diamine Fast Red F,
10 lbs. Glauber's salt,
5 lbs. acetic acid.

Work at the boil for three-quarters of an hour, then add 1½ lbs. bichromate of potash, and work one-half hour longer.

Bright Violet.

For 100 lbs. goods.

Prepare the dye-bath with
3 lbs. Formyl Violet S4B,
10 lbs. Glauber's salt.

Work for one-half hour at the boil, then add 6 lbs. acetic acid, and work at the boil for one-half hour longer.

Black Blue.

For 100 lbs. goods.

Prepare the dye-bath with
3 lbs. Anthracite Black B,
5 lbs. acetic acid.

After half an hour's working at the boil, add 5 lbs. bisulphate of soda, and work for one-half hour longer at that heat.

Black.

For 100 lbs. goods.

Prepare the dye-bath with
5 lbs. Anthracene Acid Black ST,
10 lbs. Glauber's salt,
5 lbs. acetic acid.

Work at the boil for one-half hour, then add 10 lbs. bisulphate of soda. Work for three-quarters of an hour longer, then add 1 lb. bichromate of potash, and work for another one-half hour.

There are several brands of the Anthracene Acid Blacks—namely, LW, ST, and SW—which dye various tones of black, all possessing an excellent degree of fastness to milling and light. They can be used in combination one with another, and also for producing compound shades with others of the Anthracene range of dyes.

Dark Chestnut.

For 100 lbs. goods.

Prepare the dye-bath with
4 lbs. Anthracene Acid Brown G,
10 lbs. Glauber's salt,
2 lbs. acetic acid.

Work at the boil for one-half hour, and add 4 lbs. acetic acid, and work until the bath is exhausted; then add 1½ lbs. bichromate of potash, and work for one-half hour longer.

There are several brands of the Anthracene Acid Browns, which all dye in the same way and are capable of dyeing a wide range of shades. The G brand gives a chestnut brown, the R brand a terra-cotta red shade, the N brand a very red shade of brown, the B brand a walnut brown, and the SW brand a dark olive brown. By combination of these with the Anthracene Yellows and the Anthracene Acid Blacks a very wide range of browns of every conceivable hue can be dyed.

Gray Drab.

For 100 lbs. goods.

Prepare the dye-bath with

2½ ozs. Anthracene Yellow C,
 2½ ozs. Anthracene Acid Black LW,
 10 lbs. Glauber's salt,
 5 lbs. acetic acid, and fix with one-half pound bichromate of potash, as described above.

Walnut Brown.

For 100 lbs. goods.

Prepare the dye-bath with

3 lbs. Anthracene Acid Brown B,
 1½ lbs. Anthracene Yellow C,
 10 lbs. Glauber's salt,
 5 lbs. acetic acid,
 1½ lbs. bichromate of potash, manipulated in the same manner as already given.

Deep Terra-Cotta Red.

For 100 lbs. goods.

Prepare the dye-bath with

2 lbs. Anthracene Acid Brown B,
 2½ lbs. Diamine Fast Red F,
 10 lbs. Glauber's salt,
 5 lbs. acetic acid, and fix with 1½ lbs. of bichromate of potash.—Textile Colorist.

THE IMPENDING REVOLUTION IN WEAVING.

The mechanical art and industries generally form a puzzle to the people of the world whose pursuits lie outside them. It is therefore no matter of surprise to find that the oldest, most complex, and most highly organized of them all, should to a considerable extent seem quite incomprehensible to a large number of people who have just begun to take a temporary interest therein. This is shown by the way in which they speak and write of recent inventions. Persons who only superficially glance over the columns of the daily press can hardly be unaware that a good deal of prominence has recently been given to what, by a consensus of opinion, they have come to designate "the automatic loom." The implication conveyed by this name is, however, quite inaccurate, and had the writers been acquainted with the loom, or the wonderful story of its invention and development, they would not have fallen into this mistake. The automatic loom is not a new thing, it was invented in 1784 by Dr. Edmund Cartwright, a Church of England clergyman. The design was first conceived and embodied in a concrete form by him, but the loom was far from perfect as it left his hands. Hundreds of improvements have since been invented and applied thereto, which have carried it nearer perfection and greatly expanded its usefulness. From the date of its invention until 1855 this progress was steadily maintained. About that time a pause occurred, and no material advance was made until almost the other day, when the improvements now attracting wide attention were brought before the public. The loom was rendered automatic when it was made to perform all the operations up to that time dependent on the weaver. These were—the shedding of the warp, the picking in the weft, and the operation of the lathe or slay, by which the inserted weft was driven home to the fell of the cloth. These devices were all invented and brought into harmonious operation—which was far from being the least part of the achievement—by Dr. Cartwright. Such changes as have been made since, have met with acceptance, have related mainly to the smaller details, tending to perfect their operation and having for their object the production of a higher quality of work, a greater quantity, and more variety. Important as are the new inven-

tions now engaging public attention, and which we by no means seek to minimize, they only carry the loom one degree further towards rendering it a perfect automaton, independent of human supervision. Whether the journey towards that stage will ever be completed or not is certainly open to question, and may well be doubted.

But, dismissing these retrospective considerations, we are brought face to face with the facts of the situation and the conditions which have sprung out of the development of the mechanical manufacturing industries, based upon the brilliant inventions of the galaxy of Englishmen whose lives and work added so much lustre to the past century and a half. These, by their suggestiveness, started the new era of progress from which mankind is reaping unspeakable benefits to-day. The facts, briefly stated, are that there exists in the United Kingdom alone 600,000 looms; in the United States 400,000; in Russia, 150,000; in Germany, 200,000, and in France, 100,000—totalling at least 2,000,000, engaged upon the manufacture of cotton goods. There are also at least 700,000 in the other textile trades. All of these will require to be replaced with looms embodying the principle of the new invention by which weft is automatically supplied to them while working. The alternative to replacement is conversion. We need spend little time in summarizing the facts that will render the adoption of one or the other of the courses indicated imperative. The only other alternative open for those in the trade is retirement therefrom.

It is not necessary at the moment to enquire into the origin or priority of the several inventions now being offered to the trade; they all embody the principle of supplying the loom, while in operation, automatically with weft. It is equally outside our present purpose to discriminate as to which is the best among the several competitors for the favor of the trade, as there are other matters to which it is desirable to direct attention. The first point calling for notice is that the new invention, when adopted, will more than double the efficiency of the weaver: where weavers now have charge of four looms they will with almost equal facility manage ten. In the second place, the production from each loom, owing to its avoidance of stoppages, will be increased from 10 to 15 per cent., according to the counts of the weft yarn being used. Assuming that the average earnings from one loom per week are 5s. 6d. throughout Lancashire, and taking 12½ per cent. as representing the increased production of each loom by avoiding stoppages, these earnings would be increased to 6s. 2d. per week, disregarding fractions. In the manufacture of plain fabrics, such as are mostly made in East Lancashire, weavers who have only two looms are mostly young persons from 14 to 16 years old. With the introduction of the new principle they would assume charge of four looms, and their earnings on the present basis would thus rise from 11s. to 24s. 8d. per week—an increase or economy of 13s. 8d. Weavers now having charge of three looms, would, with an assistance or "center," assume charge of eight looms. The earnings of such a weaver on three looms at present would be 16s. 6d. Under the new system they would rise to 49s. 4d. per week, and (allowing 6s. per week for the assistant) would result in a net increase or economy of 26s. 10d. The most expert weavers, again with such an assistant, would take ten looms and earn from them 61s. 8d.; allowing 6s. as before, this would give an economy of 33s. 8d. per week. In all cases no more work than at present would be entailed upon the weavers.

Taking these figures as a basis, the average economy per loom would be 3s. 4d. per week. On a shed of 1,000 looms, working 50 weeks in the year, the sum economized would be

£8,300 per annum. The profit on the increased production may for the present purpose be ignored, but in an average state of trade it would be very appreciable. Thus the new system promises to provide a very considerable sum for allocation between employers and employed. From one cause or another, into which we need not enquire at present, successful competition with the English cotton trade on the part of foreign rivals has greatly increased, especially that of America. How much of this is due to the adoption of looms with automatic weft-supplying arrangements we must leave to be conjectured, but undoubtedly a considerable amount of it must be attributed thereto. It will be obvious that if we are not to be beaten from every market in the world, this invention must be promptly adopted. The maximum advantage to be had from it will accrue to the first manufacturers and the first country that gets it extensively to work. Conversely, the disadvantage of having to compete with it will fall to those who neglect to introduce it. The truth of these statements has been extensively recognized, and forms the foundation of the general conviction in the mind of the trade that the great change involved in the adoption of this improvement is not only imperative, but also near at hand.—Textile Mercury.

SHEEP AND WOOL STATISTICS OF ONTARIO.

In the returns of live stock in Ontario for the year 1901, recently issued, the following statistics are given regarding the sheep industry of the province:

Sheep on hand July 1.		Sold or slaughtered in year ending June, 1901		
No.	Value.	No.	Value.	Value per head.
1901...	1,761,799	729,148	\$3,103,513	\$4 26
1900...	1,797,212	699,058	2,872,609	4 16
1899...	1,772,604	665,238	2,629,201	3 95
1898...	1,677,014	664,239	2,460,379	3 70
1897...	1,690,350	732,872	2,538,171	3 46
1896...	1,849,348	766,896	2,646,709	3 45
1895...	2,022,735	632,315	2,484,612	3 64
1894...	2,015,805	616,446	2,552,267	4 14
1893...	1,935,938	616,237	2,784,288	4 52
1892...	1,850,473	575,934	2,640,190	4 53

Clip of Wool.

No.	Sheared.	Pounds.	Lb. per fleece.	Value.
1901.....	950,229	5,834,097	6.14	\$ 781,769
1900.....	957,307	5,805,921	6.06	894,112
1899.....	928,184	5,525,122	5.95	790,092
1898.....	865,179	5,104,686	5.90	847,378
1897.....	887,003	5,139,984	5.79	945,757
1896.....	991,371	5,581,387	5.63	1,026,975
1895.....	1,109,140	6,214,811	5.60	1,242,962
1894.....	1,092,467	6,235,036	5.71	1,053,721
1893.....	1,015,407	5,896,891	5.81	1,073,234
1892.....	661,160	5,643,706	5.87	1,027,154

—According to the last census the total motive power used for manufacturing purposes in the United States was over 11,000,000 horse power, being double the amount for 1890, and three times that in 1880. Steam engines supply over three-quarters, water wheels 1,727,258 horse power, and electric motors, gas engines and other means, varying proportions.

NEW MATERIAL FOR CARPETS AND UPHOLSTERY GOODS.

Carpet and upholstery goods manufacturers will perhaps obtain a new raw material of decided importance through a recent invention by which wood pulp or cellulose may be spun into yarn, says the Upholstery Trade Review. The inventors of the new process are Gustav Turk, of Walsun-on-the-Rhine, and Dr. Carl Kellner, of Vienna. The spinning operation is comparatively simple. The fibrous materials are first treated as in paper manufacture, for instance in the rag engine, where they are macerated or decomposed, and thereupon passed through a specially constructed machine, resembling the sieve cylinder machine used for paper making. The novel feature of this machine, however, is that the fibrous material suspended in water is not worked on the whole breadth of the sieve roll so as to form a broad gauze, as is usual in paper making, but is immediately separated in strips of suitable breadth, which form a thread of rowing after being rolled up. Thus the gauze divider which was necessary hitherto is entirely avoided. The sieve roll is such that narrow strips of material acting as a sieve, such as wire gauze, alternate with strips of solid material.

In consequence of this construction the fibrous or pulpy material adheres only to the strips of wire gauze. The continuous movement of the water in the vat contributes to remove fibres extending beyond the edges of the wire gauze strips, and the thickness of the strips of fibrous material adhering thereto is thereby increased toward the edge, while the revolving movement of the sieve roll tends to lay the fibres of the fibrous material in a longitudinal direction parallel to one another. The strips formed in this manner are then taken off the sieve roll in the usual manner by means of a band of felt and brought between pressure rollers, where the water is squeezed out of the strips. The strips of paper or fibrous material adhere to the smooth upper roller. They are then taken off this roller and passed between two sets of rubbers moving to and fro, where they are rolled up in their length. These rowings are then passed to the sizers, where they are treated in the usual manner.

As will be seen, the process is a continuous and very simple one. In this manner fibre of only two to eight millimetres' length can easily be spun into yarns of considerable strength. Another advantage of this process is the simplicity with which the dyeing can be effected. For this purpose it is only necessary to put the dye into the vat containing the water in which the fibrous material is suspended; in this way every single fibre will be dyed before the rowing is made therefrom, and therefore the whole complicated and costly dyeing and drying process is considerably simplified.

If it is taken into consideration that the process itself is considerably cheaper than the usual method of making yarn, and that the price of best quality of wood pulp is only about one-third of that of ordinary cotton, the advantages and possibilities of this process are evident. The objection might be raised that yarn of fibrous material of only 2 to 8 millimetres' length cannot be strong or fine enough; however, this objection is futile, as there are a number of textile fabrics, such as carpets, draperies, furniture covers, etc., where the strength and thinness of the single threads are of not so much importance as the handsome color, pliability, comparative strength and cheap price. Besides, in the case of wood pulp, the strength of the yarns can easily be increased by submitting them to a chemical treatment, and finally, if such short fibred yarns are used as wefts in com-

bination with cotton or linen threads as warp, every single fibre will be tied down at least three times by the warp, and therefore such tissues will be almost as strong and durable as pure cotton and linen fabrics. Doubtless yarn made according to this process will in the future replace to a considerable extent woolen, linen, cotton and especially jute yarns, especially in the cheaper grades of fabrics, and for such in which pliability and handsome color are of main importance.

UNEVEN WIDTH.

There is a certain amount of contraction in the yarn when converted into cloth, and this contraction is called milling. In no case does the length of the cloth equal the length of the warp used. This contraction varies with the weaves employed and the picks per inch. The contraction will be greater in a plain than in a sateen or twill weave of the same number of picks per inch as there are more points of interlacing in a plain than in a sateen or twill weave. Of two pieces of cloth of the same weave but with different numbers of picks per inch, the piece with the greater number of picks will contract the yarn the most. There is no safe rule to go by in estimating the probable contraction, as the diameter of each number of yarn is different from that of every other number, and besides there is a variation in the diameter of threads of the same number. There are rules used to estimate the probable contraction, but they are only approximately correct, as frequently the estimated contraction will be one or two per cent. more or less, than the actual result. For practical purposes a sample is the safest guide and even then one sample cut of 50 yards will vary from another of the same material, owing to unevenness in the yarn and varying tensions during weaving.

It is not alone in the warp that this contraction takes place, but also in the filling. At present we are not interested in determining the amount of contraction of the warp and filling, but in the effect that it has on the appearance of the cloth. The tension on both filling and warp yarns has an influence on the amount of contraction, and if the tension varies the contraction will vary, so that the width and appearance of the cloth will vary. An important point frequently overlooked and neglected is the tension on the filling in the shuttles. Some fixers imagine that all that is required is to have sufficient tension to prevent the filling thread falling under the prongs of the fork. The greater the amount of tension on the filling thread the tighter that thread will be drawn and the cloth made so much narrower. In single box looms the variation in tension in the shuttles affects the cloth in alternate strips, but in pick and pick looms or looms with drop boxes on one side the variation occurs every other pick, or at short intervals.

On cotton goods the contraction of the filling may not affect the appearance sufficiently to attract the attention of the casual observer, but when combined with excessive tension on the warp the width of the cloth will be so materially affected that it will be noticed at once. On woolen goods it affects the fulling and gives the cloth an uneven appearance, which is attributed to uneven shrinking. In all probability the filling is all of one mixing, and it will shrink evenly. The uneven tension on the filling is brought out prominently by the fulling, and the finished cloth has not that smooth level appearance so much desired by the manufacturer. Slack tension on the warp yarn gives the cloth a raw appearance while an excessive tension will draw it narrower than the required width. As the diameter of the warp beam decreases

the tension increases and the cloth will be unfavorably affected unless the tension is carefully regulated.

DYERS' SOAP.

Soap is used by dyers for many purposes. In some cases, as in the dyeing of cotton with such dyes as benzopurpurine, it forms an important addition to the dyebath. A soap bath, either plain or broken by acid, is the principal method of dyeing silk; it is frequently used to prepare goods in before dyeing, to free them from dirt and grease; or a soap bath may be used after dyeing, to brighten up the tints and shades; it is also utilized to mill cloths in after dyeing. In textile printing, a soaping after the printing and steaming is of considerable value in brightening up the colors and removing the thickening material, or in helping to that end.

Good soap is an expensive article. It is produced from rather costly materials, and considerable care must be taken in its manufacture; hence a well-made soap is bound to be expensive. The best soaps are made from tallow, bleached palm oil, cocoanut oil, olive oil, nut oil and caustic soda. It is the fats which make the soap expensive, for a well-made soap will contain 64 per cent. or even more fatty matter, some 6 to 7 per cent. alkali, and the rest water. In the endeavor to cheapen the cost of making soap in order to be able to offer to dyers a cheap article, low grade fats, such as bone tallow, are used. Cheaper oils and soap stock, such as cotton and linseed oils and resin, are also employed; the last body does not really saponify, but makes a kind of soap at a low price; hence its use.

The calico printer wants a soap which is fairly easily soluble in water; for this reason palm, olive, cocoanut and nut oil soaps are to be preferred to a tallow soap, which is not very soluble. The soap must be quite neutral in its properties; if it contains any free alkali this might act upon the colors and alter their tints, or cause them to bleed. Alkalinity, however, is avoided by care in making. Resin, cotton oil, and linseed oil soaps are found to be somewhat alkaline in their properties, and to cause colors to run or bleed, so their use should be avoided in making calico printers' soap. As it is somewhat difficult to make a perfectly neutral soap from cocoanut oil, the soap-maker takes care to use little or none of that article, more especially as it is not as cheap as soap fat. Printers' soaps should not have any tendency to leave any odor in the goods; if so, it should be a pleasant one. For this reason soaps made from tallow, lard, cotton and nut oils are not good articles, as they are apt to leave the cloth with rather unpleasant odors. It therefore happens that, on account of the reasons here set forth, the calico printer prefers a soap made from palm or olive oils to any other kind of soap, and although he does not object much to tallow soap, yet he carefully avoids any soap which contains resin or cotton oil.

The silk dyer also requires a fairly neutral soap; one that will not impart any odor to the silk. He prefers an olive oil soap made with caustic soda, and if it be a well made soft soap from caustic potash and olive oil so much the better for his purpose. A palm oil soap is also a good one for silk dyers. Cocoanut soap is rather troublesome to make neutral, and any free alkali is apt to affect the shades dyed on the silk. Soaps containing resin are to be avoided, especially if the soap is used in a bath along with acetic or sulphuric acid; the resin set free tends to cling to the silk and gives it an unpleasant feel.

In preparing cotton goods for dyeing, a wider choice of

soap is available, and any fairly good make may be used. Perfect neutrality is not necessary, in fact a slight amount of alkalinity is of benefit rather than otherwise, as it helps to cleanse the cotton. A soap made from any of the soap fats enumerated above, alone or mixed together, may be used. In some methods of cotton dyeing soap is added to the dye-bath; this should be of better quality than that used in cleansing the cotton. It ought to be neutral, so that it will not have any action on any colors dyed in the soap liquor (a strongly alkaline soap might alter the shade of chrysamine, for instance), and it should not be liable to impart any unpleasant odor to the cloths. For these reasons the best soaps to use are those made from palm oil or olive oil, or one made from a mixture of those fats. For soaping cotton goods after dyeing (which is, however, not often done, for the same reason as set forth above under printers' soaps), palm oil and olive oil soaps are those most to be recommended.

The woolen dyer only uses soap after he has dyed his cloths for the purpose of assisting in the milling, and he finds that a good soap made from tallow or palm or olive oil gives him the best results. It should be neutral in nature, although a slight degree of alkalinity is of but little consequence for it is generally neutralized by the trace of acid which is invariably present in woolen goods after dyeing, this acidity of the goods and the alkalinity of the soap tend to neutralize one another.

Before woolen yarns and cloths are dyed it is usually necessary to remove any oily matter which they may contain. This is done in a soap liquor, and a very common soap for this purpose is one made from bone fat and cotton oil; occasionally resin is added. It is not needful to have a neutral soap; in fact, a little alkalinity is rather desirable than otherwise, as it helps to emulsify the oil in the goods, and so makes its removal rather easier. The soap ought to be one which is fairly easily soluble in water, so that it can be readily washed out of the goods after they have been treated, as if any were left in it might tend to produce defects such as unevenness in dyeing.

SHEEPMEN AND CATTLEMEN.

It is estimated by a Colorado authority, says the New York Tribune, that in the last 10 years of the conflict between cattlemen and sheepmen on the grazing lands of the public domain the average yearly slaughter of men has been 500, and that the total loss of human life has more than equalled the total of the army's fatalities in the Philippines and Cuba. Within the same period, it is said, 600,000 sheep have been wantonly killed by the cattlemen at a loss of \$2,400,000 to the sheepmen. The latter, as the figures show, are usually the party worsted, their stock being more easily killed and driven off, and the shepherds less effectively organized than their competitors and oppressors. According to an Oregon paper, the cowboys throw dynamite among the flocks, killing hundreds with a single cartridge, and sometimes their shepherds with them. Here is a month's record of the bloody doings in two States, reproduced from the San Francisco Call: On June 30 the settlers in the north end of Grant county, Oregon, armed with Winchester, surrounded all the large herds of sheep on the range and killed them all. In Bear Valley, in the same State, the settlers shot all the range sheep and killed the teams and pack horses of the herders and shot all their dogs. Two men were also shot. Near Black Canyon, in the same State, masked horsemen held up the herders and killed all their

sheep. At Landor, Wyo., on July 24, a band of 150 armed men—masked and mounted—killed the herders of several thousand sheep and slaughtered all the animals. In addition to the several thousand sheep slaughtered, 65,000 were left without herders or dogs, and scattered off the range into barren mountains, where they soon starved to death or were destroyed by wild animals. July 28 several thousand sheep were slaughtered by riflemen on the range south of Pendleton. On the same day at Grand Junction, Col., 12 masked men attacked a valuable herd of Angora goats and killed 5,000 of them. The owner Mrs. Irving, had 600 more on another part of the range, and next day was notified that they would also be killed if they were not removed from the Pion Mesa. On August 2 a Mexican shepherd at Grenada, Col., was murdered, his body mutilated and his sheep killed.

IMPRESSIONS OF AMERICA.

THE WOOLEN INDUSTRY—BY JOHN FOSTER FRASER.

It was an American and a professor at one of the big textile colleges who spoke. Said he: "It is the high fence of a tariff that keeps English textiles out of the United States. If English goods were able to compete on even terms with American, half our woolen and cotton factories would be closed in a year. As it is, Heaven help the American textile manufacturers when you Englishmen take to using quick machinery."

At Lowell, Massachusetts, I visited the Textile School, the best in all America, and had a long talk with Mr. Wm. W. Crosby, the principal—a charming man, young, with keenness in every line of his handsome face, wide read and travelled. He was enthusiastic about technical instruction, and especially about what it was doing for the textile trade, lifting America into the sky about European work.

As we were leaving the school, he assisted me with my overcoat. "Why," he exclaimed, "here's my coat, the same as yours, and made at the same place. I bought it last year when I was in London at half the price I would have to pay in America. As to quality, it has been the marvel of many of our manufacturers, for they cannot turn out stuff like that. Yes, and this suit of clothes I'm wearing was made in London also. I know a good piece of cloth when I see it, and I was simply astonished that I had only to pay £4 for the suit. Splendid goods, indeed! Why, here I couldn't get anything like the quality for twice the money."

That almost accidental confession from the principal of the Lowell Textile School was a striking commentary on the relative merits of English and American cloths.

During the time I was in the States, I often shuddered at tailoring prices, and thanked my good star my wardrobe was sufficient to take me back to my own country. Nowhere did I see American textiles that came within a long distance of English. When I did see excellent clothing, with a fit equal to Conduit Street, the material was English imported, and the price was from two-and-a-half times to three times that of London.

It is a common remark that American working men are better dressed than the English workmen. If I may indulge in an exaggeration to demonstrate a truism, I would comment that American clothes won't last long enough to get shabby.

Take the average crowd that shoulders you in Cheapside, and compare it with the crowd that hustles you in Broadway. The first swift impression is that the New Yorkers are far better dressed. That impression holds. Men coming

from Pittsburg ironworks are certainly more sprucely clad than the cutlers of Sheffield. You cry: "Yea, yea," to the constant assertion of Americans that they are better dressed than their English friends. One day, however, you meet an English gentleman. You notice a dignity, a refinement, a restraint of tone about him and his dress that the American never has. It is not the fit of his clothing—for the Americans are as able as English tailors—but it is the quality. From him you may commence to reason backwards. You will find the American business man, while he dresses neatly—though his fancy m shirts this year has been on the lines of a Neapolitan ice—is wearing material such as you find in the cheapest English goods, stuff the like of which in quality is hardly ever seen except upon a dummy at the doorway of a ready-made shop.

Large though American incomes may be, a man has to be within the circle of the wealthy to afford having a suit specially made, even of this stuff. It is marvellous the number of well-to-do men who wear ready-made clothing. The fit, however—just as in the matter of the fit of American boots—is far better than the fit of English ready-made clothing. English ready-made clothing seems to have "Huddersfield" stamped all over it. A trained and not a lay eye is necessary to identify a ready-made coat in America. That bespeaks ingenuity, adaptability, a huge stock of accommodating sizes. Besides half-made clothes have a run in America. The goods are cut and tacked, as one's clothes are in England at the last fitting-on by the tailor, and but few alterations are necessary to make the coat look as though it had been specially made.

Why the Yankee has Failed.

There are, however, several reasons why American textiles are poorer than our own. There is the tariff. When the tariff was cut down a number of years ago, the American woolen manufacturer found himself hard hit by the fine and cheap goods sent from Yorkshire. He met the competition in two ways—first by producing a better article than he had ever done before, and by clamoring for a re-imposition of the heavy duty. His clamors succeeded. Up went the tariff fence again, shutting out English wares, and down, with a rush, came the quality of American goods.

Another reason is that the ordinary American is more anxious than the ordinary Englishman to have clothes that look smart rather than wear well. Also he wants them cheap—from the American idea of cheapness. A British working man gets a serviceable suit, and it may be two or three years before he discards it. In its latter days it will be dirty, greasy, baggy-kneed, and frayed. The American workman never wears a suit till it gets in that condition. He has something neat, well-fitting, and of latest cut. It may only be poor shoddy. In three or four months, when it begins to go to pieces, he has got tired of the suit. And just as an American hardly ever has his boots repaired, but throws them away and buys a new pair, so he has three or four suits of clothes to the one suit that the Englishman has. American clothing would not last long enough to get into the state of grime a British workman's clothes are often in.

In writing this down, I am not overlooking the fact that, man for man, the American is much more solicitous about the smartness of his appearance than is his compeer on this side of the Atlantic. Therefore, the second reason why American woolen goods are inferior is that the American would rather have something that looked good than is really good.

The manager of one of the biggest works in New Eng-

land said to me: "Of course we've got nothing like your English stuff," and then dropping into a simile, he added: "As long as we are making fortunes, turning out wheel barrows, which people want because they are cheap, why should we spend time turning out fine coaches, which are dear, and which people don't want?"

Then he ventured upon an assumption which was hardly warranted. He implied that if they wanted to, the woolen manufacturers of New England could turn out as excellent cloth as we have in Great Britain. Certainly, when the heavy tariff was removed, they gave evidence of turning out far better stuff than they now do. But he failed to reckon two important factors.

Frequently in these articles have I referred to the stimulating atmosphere of America, that, braces one, pumps the ozone of energy into one's veins, exhilarates and spurs one on. But this atmosphere is not suitable for woolen manufacture. The muggish air which hangs about Yorkshire dales plays a very important part in the fine quality of woolen goods turned out. There the English weaver has an advantage which the American can never have.

Another thing is the workpeople in New England, which is Old America, society are more settled. The habits of the West of being a cow-puncher one year, a saloon-keeper the next, an insurance agent the next, a parson the year after, then a farmer, then a speculator in mines, do not exist. People are more inclined to keep to the industry they have once embarked upon. But sentiment, tradition, environment, count for much in commercial work, and in the woolen business this exists to only a small extent in Massachusetts, Rhode Island and the adjoining States. In the Yorkshire woolen areas it is possible to trace back, two or three generations, and perhaps more, of families who have done nothing but weave wool. Many American manufacturers told me they reckoned this a great advantage to the British trade. Young people grew up in the atmosphere of wool-weaving, and almost by second nature they knew things which the finest equipped textile college could not impart. Comparatively few of the workers in the New England woolen mills are American born. The mass are French-Canadian and Irish, good enough workpeople, in a restricted sense, but lacking the intuitive knowledge that Yorkshire weavers have.

The best workmen are imported English people, and the best machinery is that which comes from England. In places are whole colonies of transplanted English folk, and in some mills I went past rows of machines bearing the plates of Yorkshire and Lancashire firms. In works that turned out goods of the cheap and shoddy quality, quick American machines were used. In the works that produced a fairly good article slower but English machines were to be seen. I am not far from the mark in saying that the quicker the machines and the greater the quantity, the quality decreased in almost exact proportion.

To me, a Briton, with, I suppose, some inborn British prejudices, but in considering the industrial condition of America, trying to be absolutely fair, appreciating what was better than in England, having my little sling-at what was worse and unwholesome, it came almost as a breath of relief to pass from trades and businesses that had superior management—such as the instance of boot and shoe manufacture—to our own, to the centre of the American textile world, and find that here at least England could still stand with chin high poised.

Behind at Their Own System.

America is truly the land of contrasts. These contrasts are a constant stumbling-block to the man who would like to generalize on differences between the United States and England in single phrases. Take the matter of specializing, which Americans rightly declare is one of the reasons of their industrial prosperity. They throw the scoff at the British manufacturer, that he does not succeed so well because he tries to do the whole business under one roof, instead of centering all his energy on a speciality. That is true, and I fancy the American cannot have better proof than in the woolen factories of New England.

In Yorkshire the preparation of yarns, carding, or dyeing is often quite a separate industry from that of weaving. In the Massachusetts mills the practice is for each firm to do everything from the time the greasy wool is delivered to it being sent out as finished cloth. Therefore, I am tempted to say that one cause of the Yorkshire woolen manufacturer being prosperous is that he runs his works rather on the American line—though the system existed long before America put forth its strength as an industrial nation—while the Massachusetts manufacturer runs his works on the general English plan by not specializing.

This led me to make investigations which were interesting in their results. Just as the English manufacturer in the mass—take again the boot and shoe manufacturer as an instance—suffers in competition because he does not specialize, the Massachusetts woolen manufacturer, who does not specialize, either stands on a low level or makes comparatively slow progress. The method of the American woolen mills was an anomaly in America; it was an anachronism; it was altogether contrary to the way that nine Americans out of ten will declare is necessary for success.

Here, then, I find a trade, not managed in the way it is managed in England, but managed in the way most other English trades are managed in England. I wrote to Washington, and an obliging Government official sent me a bulletin of facts and figures. When I dived into them I discovered that during the last twenty years the number of establishments engaged in wool manufacture had decreased over 13 per cent. This, however, was accounted for by the consolidation of businesses, because the invested capital had increased over a hundred per cent. Wages had increased enormously—but in striking an average the salaries and incomes of proprietors and firm members were reckoned—while the employment of men had increased 34 per cent.—and many of these men were boys of seventeen, eighteen, and twenty—women had increased 69 per cent., whilst the employment of children under sixteen years of age had within the last ten years increased 37 per cent.

That looked fairly reassuring from the American point of view, till I turned to the table giving statistics of the making of woolen goods. Here I found that in the decade between 1890 and 1900 not only had the establishments decreased 21 per cent.—they decreased 34 in the previous decade—but the capital invested had decreased 5 per cent., the number of salaried officials had decreased 7 per cent., the salaries themselves had slumped 25 per cent.; wage-earners had decreased 10 per cent., and there was a steady decrease of men, women, and children, and their wages had gone down, in the case of men, 0.9 per cent.; women, 13 per cent.; children, 11 per cent. The number of looms, the value of products, showed a falling away of over 10 per cent. The only increase was in the number of spindles, from 1,815,380 to 1,906,581—a move upwards of 5 per cent.

The official explanation of this falling off is that the in-

roduction of worsted cloth for men's wear and the development of knit-goods manufacture, have made inroads on the consumption of carded wool goods, which formerly were necessities. The real explanation why the quantity of wool used in the American mills is 10 per cent less now than ten years ago, is that the consumer will have a cheap and showy article, and this can be turned out with worsted, flannel, and shoddy. Indeed, there are 105 mills in America that turn out nothing but shoddy. An attempt is being made to push a bill through Congress making all manufacturers and dealers in shoddy goods pay a heavy tax, and tag their goods, stating their nature. The wool growers are enthusiastic; the cloth manufacturers are contemptuous and wrathful. The wholesale use of shoddy in America, made of anything from tattered carpets to seaweed, the willingness of the public to wear such material, so long as it looks nice for a month or two, has hit hard the genuine woolen business. The machinery in many mills is only in partial operation or run on part time.

The Good Points and the Bad of the Operatives.

Though there is not that helter-skelter, nerve-racking kind of life in the East that there is in the Western States, the employers I found were all awake to the necessities of modern trade. In one way they provided a parallel to English manufacturers, for theirs is one of the oldest industries in America, and while admitting the pace and the daring was not so great as in other businesses, they pleaded custom, long usage, difficulty in making a break from the habits of a century—precisely the excuses the English manufacturer gives when face to face with American competition, and he is invited to get himself and his works into line with ways across the Atlantic.

What the American does is to keep his eye on improved machinery, and work the machinery and men to their utmost. While ten years ago only a few broad woolen looms were operated up to 100 picks per minute, now they run at from 115 to 120, and in some cases 150 picks per minute. There is no "ca' canny" among the workpeople. There are practically no Huddersfield difficulties of men only looking after a loom or two, while several miles away other men are able to look after half as many again. The Huddersfield man is an admirable workman, but if he went to Massachusetts and started talking about custom, and only wanting to do half as much work as men round about him were doing, he would be told many things for his good, and his ears would tingle for a fortnight. But when Huddersfield men go to Massachusetts and after a few grimaces throw away their Huddersfield arguments and adapt themselves to their new situations, not only are they as good men as the Americans, the French-Canadians, and the Irish, but far better, and with a smile look after twice as many looms as their "local custom" allowed them to attend to in the Old Country.

America has practically no export trade in woolen goods. Her mills supply only the home market, and any foreign competition is nigh killed by high tariffs. Beyond the United States, where the wool stuffs would be tested alongside those of England, America has no chance at all.

In regard to the conditions of labour, I found that the working week was generally 60 hours. The wages of a man, who looks after eight looms, is about 45s. Women make from 20s. to 25s. Children, youngsters between the ages of 14 and 16, make about 12s. Rent is dear, nearly three times as much as in England, and clothes are dearer than at home. Food, however, is about the same price in both countries. The New England mill operative "does himself well." He

seeds well—better than the Yorkshire operative. He has, however, no eye on a coming rainy day. It doesn't enter his mind that he may fall sick or ever get out of work. He doesn't save money.

On the whole, the English manufacturer is more prosperous than the American, whilst the American mill-hand works harder and longer, and gets more wages. Balancing one thing with another, however, the operatives of the two countries are, in material condition, very much on a level, though a triling advantage is on the side of the American.

The American mill operative, Englishman, Irishman, French-Canadian, or American, struck me as a clear-headed, far-seeing fellow. He has no prejudice against labor-saving machinery. He doesn't regard the "boss" as his natural enemy.

Summing up my impressions of the woollen industry, I would say that though America has much to teach us, it is not yet necessary to send Yorkshire mill-owners nor operatives to Massachusetts to learn their business. We amble behind our Yankee friends in many trades. In the woollen business, however, it is they who do the ambling.—Yorkshire Post.



A New Shower Cape Coat.

THREATENED CHAOS IN THE WOOL INDUSTRY.

The so-called shoddy bill requiring textiles to be labeled with tags showing the percentages of different fibres in the goods has been introduced into the House of Representatives by Congressman Grosvenor of Ohio. The first section reads as follows:

"That for the purposes of this Act the words 'pure wool' shall be understood to mean sheep's wool which has not been previously used in the manufacture of any other article, goods, or fabrics, and the words 'woolen goods' to mean goods or fabrics composed wholly of such wool.

"That for the purposes of this Act all manufactures made in imitation of woollen goods which are not composed wholly of pure wool shall be known as "mixed goods."

The intent of this section is and its effect would be to discredit all textile fibres except sheep's wool which has not previously been used in the manufacture of goods. This is somewhat clumsily concealed by the phraseology of the bill in order to conform to the political exigencies in Congress, but in the bill proposed by the National Live Stock Association at Chicago this intent is stated with a frankness that deserves the highest praise. This last named document declares in a straightforward farmerlike fashion that "the word 'shoddy' shall be understood to mean all fabrics made wholly or partially of waste, hair, mungo wool extract, waste woollen rags, and all fabrics in which wool in any proportion is used

in connection with any of said fibres, materials or fabrics, and all articles in which cotton, linen, hair or other fibres or substances are used in connection with wool or woollen fibres in the manufacture of any cloth, fabric or any other article."

The prejudice created against these other fibres by branding them as inferior when mixed with wool would inevitably be extended to the fibres even when not so mixed. Cotton, linen and all other fibres except new wool must bear the brand of inferiority. They do not come from a sheep's back, and must therefore necessarily be a cheat and a sham to be branded with some degrading mark in order to guard the people against purchasing and using them.

We produce annually in this country about 5,000,000,000 pounds of cotton and supply three-quarters of all the cotton used in the world. The proposition to affix under any conditions to this great product and to all the fibres not obtained from a sheep the stamp of inferiority is interesting, particularly to the representatives from the Southern States. According to this first section the long, lustrous mohair of the Angora goat, not having grown on a sheep, must likewise be branded.

Sections 3 and 4 provide for attaching tags to the goods by manufacturers, clothiers and others. Section 5, dealing with imported goods, reads as follows:

"That all mixed goods of every kind and description whatsoever, including cloths, clothing, and every article manufactured or in any of the processes or stages of manufacture imported from foreign countries, shall be marked, labeled, or tagged as provided for in case of manufactures of the same in the United States. The labels, tags, or tabs required by this Act shall be affixed by the owners or importers while it is in the custody of the custom house officers, and it shall be the duty of such officers to inspect all such goods, fabrics, or other articles, and see that they are properly labeled; and such goods shall not pass out of the custody of such officers until such labels or tags have been so affixed; and every officer of customs who permits any mixed goods as defined in this Act to pass out of his custody or control without compliance by the owner or importer thereof with the provisions of this Act, shall be guilty of a misdemeanor, and shall be fined not less than \$1,000 nor more than \$5,000, and imprisoned not less than six months nor more than one year.

If the provisions of this section are carried into effect, no fabric containing the slightest proportion of wool will come into the United States, for there is no method known to man of determining how much of the wool in a fabric has been and how much has not been subjected to a manufacturing process before it reached the mill where it was last converted into cloth. The custom house officials can distinguish cotton, linen, silk and certain other fibres from wool and woollen shoddy, but they will be forced either to refuse admittance to the goods or accept the statement of the importer as to how much wool shoddy there is in the cloth. What an alluring prospect for the manufacturers and importers of shoddy goods in the Batley district of England! What are the custom officers to do when Batley goods made of all or nearly all woollen shoddy are presented to them with the label "all wool?"

The next four sections provide penalties for neglect to attach the prescribed tags to the goods. These penalties consist of confiscating the property in addition to the imposition of fines ranging from fifty to four thousand dollars. Absurdity could go but one step farther and make it an offence to manufacture or wear clothing made from any

material not sheared from a sheep. Among other things the bill provides:

That for all goods, fabrics, clothing, or other articles manufactured, or in process of manufacture therefrom, required by this Act to be labeled, which were manufactured prior to the passage of this Act, and which had passed out of the hands of the manufacturer thereof, and the ingredients or component parts of which are not known by the owner, merchant, or custodian thereof, a label, mark, or tag may be affixed, as provided in this Act, bearing the words, "manufactured prior to the pure fibre act, composition not known," which for such fabrics or article shall be a compliance with this Act.

The manufacture and distribution of woolen goods necessitates keeping large quantities of manufactured goods in stock at the mills and in the possession of the cloth jobbers, garment manufacturers, tailors and retailers of cloths and ready-made garments. The value of this stock cannot be stated accurately; that it is enormous cannot be doubted, when we consider that the value of the annual production of so-called woolen and worsted goods is estimated at \$423,000,000.

In view of the fact that the greater part of the material in process of manufacture in our mills would be subject to the provision last quoted, it is a fair estimate that a stock equal to two years' production, valued at say \$850,000,000, is to be labeled, "Manufactured prior to the pure fibre act; composition not known."

This vast accumulation of property is to be cast under suspicion, regardless of merit. Its value is to be depreciated, no one knows how much, and this frightful loss is to be borne by manufacturers, clothiers, tailors, everyone owning wool in a partial or complete state of manufacture, in order to raise the price of wool in its manufactured or raw state. Such a law, if enforced, would spread ruin and bankruptcy throughout the woolen business, and if seriously regarded as imminent would instantly paralyze every branch of this great industry.

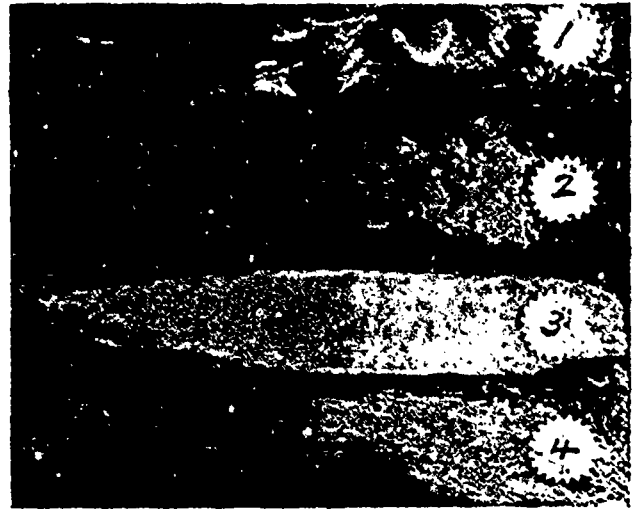
The oleomargarine law, after which the Grosvenor shoddy bill has been patterned, provides that the Secretary of the Treasury shall make necessary regulations for carrying the law into effect. A similar provision is embodied in the last section of this Grosvenor bill, and reads as follows:

That it shall be the duty of the Secretary of the Treasury to make all necessary rules and regulations for carrying into effect the provisions of this Act."

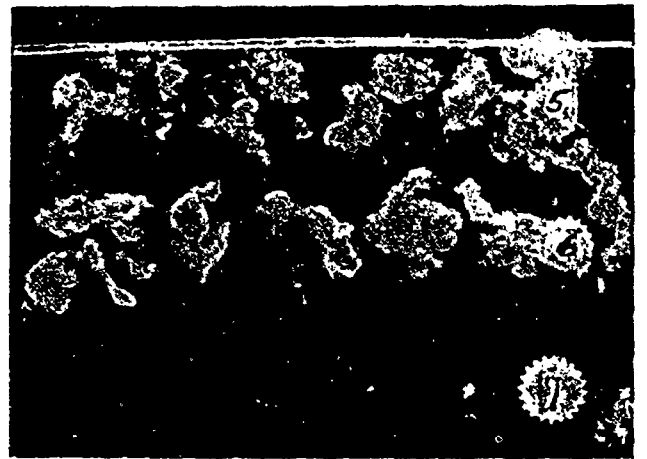
With oleomargarine and butter, the Secretary found that in nearly all cases a simple microscopical examination would disclose whether the substance was butter or oleo, this simple test failing, that a chemical analysis would unerringly disclose the nature of the specimen. All that was necessary was to equip each inspector with a microscope and a few photographs showing how oleo and unmelted butter appear under the glass.

There are, of course, chemical tests by which certain fibres may be distinguished from certain others. Animal fibres can readily be distinguished from cotton, linen and other vegetable fibres, and, if this were enough to cover the intent of the law, its execution would be accompanied by no more difficulty than the enforcement of the oleo law has given. The supporters of this Grosvenor bill, however, aim their attack at wool which has been through a previous and dimly defined process of manufacture. The Secretary of the Treasury must see that all cloths are labeled with the percentage of each material, including remanufactured wool or so-called "shoddy."

Now it is clearly absurd to expect either the microscope or chemical analysis to determine what part of the wool in a finished fabric has been "worked" once and what part twice; in other words, to determine the journey taken by the fibres before reaching the cloth in which the inspector may



Grosvenor Shoddy.



Grosvenor Pure Wool.

Under the Grosvenor Bill, cloths made from superior stock, like Nos. 1, 2, 3 or 4, would be mixed or shoddy goods; cloths made from inferior stock, like Nos. 5, 6 or 7, would be pure wool goods.

find them. This is no more possible than to determine how much the gold in a gold coin, a watch case or a ring came direct from the mine, and how much had been used before in the coinage and jewelry of past ages.

For this reason the Secretary of the Treasury must adopt other regulations than those which have served for oleo. He can, to be sure, accept the statements of the manufacturers as to the composition of their goods. There are three difficulties in the way of this course.

The manufacturer cannot afford the great expense of maintaining the system necessary to make a fairly accurate estimate of the proportions of each material in his finished product, and, consequently, his statement would necessarily be inaccurate.

The wool grower would not be satisfied with this course.

Finally, it would tempt people without a scrupulous regard for the truth to engage in the manufacture of woolen goods. This would mean that the honest manufacturer of goods containing 90 per cent. of wool would tag them as

"mixed" or shoddy goods, while the dishonest manufacturer of goods containing 99 per cent. of shoddy would tag them "all wool."

The other alternative is to establish government inspection of all woolen mills. The magnitude of such an undertaking may be faintly realized by considering the vast number of factories scattered throughout the country, the intricate character of the manufacture, and the necessity for a police surveillance of not only every mill but every department in every mill in the United States. The absurdity of such a proposition needs no demonstration.

Now let us consider briefly the difficulties in the way of defining wool and woolen shoddy. As both are wool the inferiority of one consists in its shorter and poorer staple. That being the case, the supporters of the Grosvenor bill, who are so anxious to protect the consumer of wool cloth, will appreciate the necessity of accurately defining the terms and protecting the consumer from short wool fibres, whether they come direct from the sheep's back or not. What is the short, seedy, six and eight months' wool to be called. And the "cotted" fleece which, hanging together like a piece of leather, must frequently be torn apart by a rag picker before it can be used? And the "shearlings" which the shepherd's shears could not reach and which are scraped from the sheep skins? These are all much inferior to many grades of waste and shoddy. Are they to be called "pure wool" or not?

The first operation in the manufacture of woolen goods is the sorting of the different grades of the wool. Which of these grades are to be dubbed pure wool and which shoddy? One of these sorts is known as "clippings" and consists of little tufts of matted wool, burs, tar, paint, dirt and dung. Is this to be called pure wool?

There is not a step in the various processes of manufacturing woolen goods that does not present equally perplexing problems, which must be answered if this Grosvenor bill becomes a law. Are the foul clippings from the fleece to pass as pure wool, while the long wool known as slubbing and ring waste to be branded as "shoddy?"

The question at once arises, What is "shoddy" and what "pure wool" as defined by this proposed law? While it is difficult to give a rational interpretation to such an irrational proposition as this bill, it is necessary to assume that it means something in order to point out its absurdities. One of its peculiarities is that the absurdities are in no wise lessened in number or degree by varying the interpretation of its provisions.

If we assume that the intent is to class woolen waste with shoddy, cotton and other adulterations, then all of the many waste products of the mill, varying from fine, long worsted waste to shear flocks (the latter being pulverized wool with no visible staple), must be classed together.

On the other hand, if woolen waste is not classed as "shoddy," then flocks or pulverized wool will march proudly side by side with the finest and best of wool from the sheep's back. Adopting the former interpretation, we find that the Grosvenor bill will make the classification shown in the accompanying illustration. These samples have been taken from stock offered for sale in Boston on January 2, 1902.

No. 1 is mohair, long lustrous, useful and beautiful, but it did not grow on a sheep, and is, therefore, "shoddy."

No. 2 is garnetted worsted yarn waste of long and strong staple classed by this bill as "mixed" or shoddy material, and from which much better fabrics can be made than can be manufactured from the stock shown at Nos. 5, 6 and 7 which under this bill would be classed as "pure wool fibre." No.

3 and 4 are samples of worsted combed stock, which has become waste by reason of the sliver or strand having been broken in the process of manufacturing. Stock such as these four samples, 1, 2, 3 and 4 will be "shoddy" under the Grosvenor bill.

No. 5 is a sample of "shearlings" wool; this is the wool left on the sheep's skin by the shearer and afterwards removed by the puller. It has been subjected to no process, other than washing, since coming from the sheep skin. It speaks for itself, being shorty, nubby and much inferior in staple, not only to 2, 3 and 4, but to a large part of the material known and sold as waste and shoddy.

No. 6 is a sample of four months' Texas wool, very little, if any, better than No. 5. The sheep did her best in the brief four months she had to grow this stock, but the wool grower, with a disregard of the consumer's interests in striking contrast with the solicitude professed by the promoters of this "pure fibre bill," seized her and cut the pure wool fibre that we see at No. 6.

No. 7 is a sample of wool clippings obtained in sorting wool. It is composed, as can be plainly seen, of pieces of short wool, matted with dung, seeds, burs, etc. Having come directly from a sheep's back without contaminating contact with woolen machinery, it must under this bill be classed as "pure fibre."

The samples shown have been selected to show the best stock classed as shoddy, and the poorest stock classed as pure wool by the Grosvenor bill. The other grades of "shoddy" vary by imperceptible gradations until flocks or pulverized wool is reached, while the other grades of wool will vary by an ascending scale until the best Australian wool stands at the head of the list.

We ask the supporters of this bill to look at these few facts about fibres to which we have briefly called their attention. It requires no expert knowledge, nothing but a little common sense to recognize the impossibility of distinguishing the innumerable grades of wool stock in the form of short wool, long "shoddy," long wool and short "shoddy" from each other when intricately mixed together by the various processes of manufacturing cloth.

Men may be found who can be bribed by the promise of a Government position to say that they can distinguish these materials, but, in the light of even the few facts about fibres to which we have called attention, we ask the supporters of this bill what their opinion would be if a man, who, to secure a position as Government inspector of fibres, says he can so distinguish them with such a degree of certainty as to warrant imprisoning his fellow man and depriving him of his property.

The secretary called upon to prescribe regulations for this Grosvenor bill might well exclaim with Dogberry in his instructions to the night watch: "I think that they that touch pitch will be defiled; the most peaceable way for you, if you do take a thief, is to let him show himself what he is and steal out of your company."

We have hurriedly called attention to a few of the absurdities and impossibilities proposed by this law, whose sole object is to raise the cost of wool to the consumer. It is difficult to take such a monstrosity seriously. It is so taken, however, in influential quarters, both inside and outside of Congress. It deserves discussion only because of the influence of its friends. It needs only discussion in order to be quickly consigned to the oblivion which natural law has provided for such enterprises as railways to the moon and Grosvenor "pure fibre" bills.

There is, moreover, another important phase of this question. The theory of a protective tariff that it reduces

the cost of goods to the consumer has been strikingly demonstrated in many branches of American industry, notably in steel and tinplate manufacturing. It yet remains for this theory to be demonstrated in the manufacture of woolen goods. The success of that demonstration depends in great measure upon securing at a reasonable price an adequate supply of the raw material on this side of the tariff wall.

No tariff policy is secure which tends to keep the cost to the consumer of the finished product at an unnaturally high level. The production of wool and woolen cloth is an important branch of America's industry. But it is not the only interest in the country. There are other forces to be reckoned with. It behooves grower and manufacturer to see that the theory of low cost to the consumer under protection be demonstrated without unnecessary delay in the manufacture of woolen goods.

In the broad sense of the term, the woolen industry includes all operations from the growing of the wool to the making of the garment. All branches of this great industry, including both wool growing and wool manufacturing, stand or fall together. Each branch has an equal right to adequate protection. The great mass of woolen manufacturers are solidly for protection, both for the cloth that comes out of it, and the wool that goes into their mills. The wool grower and the woolen manufacturer are not unlike the two opposing attorneys who, with all their differences, were united on the main point that each was making his living out of the same case.

Assuming that the impossible happens and that such a law is carried into effect, the result would be chaos in the woolen industry, and a rise in the price of wool and certain grades of woolen cloth, that would probably sound the death knell to a protective tariff on wool and woolens. We believe that a careful and broad consideration of this bill will lead its ill-advised supporters to withdraw their appeal for governmental assistance in raising the price of wool, and exclaim with Beatrix: "I have a good eye, uncle; I can see a church by daylight."—Textile World.

WOOL—THE STRUCTURE OF THE FIBRE.

When the wool fibre is examined under the microscope it is seen to consist of a cylindrical fibre, which is covered with a series of thin plates or scales, irregular in shape, and more or less pointed and arranged to overlap one another, thus imparting a separated appearance to the fibre, a feature which distinguishes it from other textile fibres, such as silk, cotton, flax, etc. The straight fibres which are found on animals have a different structure. The hair fibres are cylindrical and rod-like, showing no appearance of scales, while the fur fibres are somewhat scaly, and thus in their structure are intermediate between wool and hair fibres.

Though there are many distinct and well-known breeds of sheep, it is found that the fibres which are obtained from them are identical when examined under the microscope, so that the wool from one breed of sheep might readily be mistaken for that from another. The rough, serrated edges of the exterior scales of the fibre play a most important part in causing the "felting" or "milling" of woolen goods, and also in the operation of dyeing, when it is supposed they open their edges and allow the coloring matters to penetrate the substance of the fibre. When the wool fibre is subjected to friction, especially in hot water with a slight quantity of alkali, these epithelial scales become readily matted and interlocked with each other—"felted" as it is called. Yarns which become felted in the scouring operations, says the Textile Mer-

cury, are much deteriorated, as they have to be forcibly torn apart, and this naturally weakens and destroys the fibre.

When a wool fibre is examined under the microscope, it will be observed that the free ends of the scales all point to the free end of the fibre—that is, the end which is not attached to the skin of the animal. Now when two of these fibres get side by side with their scales pointing in the opposite direction, the scales interlock one with another and the two fibres become so closely connected as only to be separated by the exercise of some considerable force, which results in a weakening of the strength of the fibre. When the number of these fibres are multiplied, as in the case of a piece of woolen cloth, and felting of the fibres is brought about by the process known as fulling or milling it is accompanied by the fabric becoming more compact, thicker in texture, shorter and narrower.

The great importance of preventing felting during scouring and dyeing is well known to all, but it becomes doubly important when the microscope reveals the extent of the damage it causes to the fibres. Woolen yarns felt more readily than worsted ones, as in the former the staple is short and the fibres are lying in different directions. In worsted yarn, however, the fibres are longer and are inclined to lie more in one direction as when growing on the sheep's back.

This felting of wool is produced by using too high a temperature either in the scouring or the dyeing processes, or by excessive handling of the yarn, especially in liquids which are slightly acid, as in dyeing, or slightly alkaline, as in scouring. Dilute acids have the property of opening up these exterior scales of the wool, giving it a more serrated appearance, which is visible under the microscope. The scales being opened, dye solutions can enter into the interior of the fibre better and there become fixed within the wool, which then becomes permanently dyed. Hence the value of the addition of acid to the dyebath. The acid, however, has some other functions to perform in connection with the dyeing operation. Under the outside sheath or cuticle, with its overlapping scales, there is the cortical substance of the fibre itself. Upon this depends very largely the elasticity and color of the wool.

This substance consists of almost innumerable minute cells, all tightly bundled together. By treating the wool with suitable chemical reagents—strong sulphuric acid, for example—these masses of spindle-shaped cells can be separated, and their shape observed with the microscope. They are found to be long and tapering in shape, ending in a fine point at each end. Dr. F. H. Bowman, to whom we owe most of our present knowledge of the internal structure of wool, has had the patience and industry to count these, and he tells us that in a cross section of the fibre may be counted 1500 of these cells, while there are about 6000 of the scales to an inch of wool fibre. This cellular substance of the wool is what we might term the marrow of the wool fibre, as it constitutes nearly the whole of the inside portion of the fibre.

In many specimens of the wool fibre there is a third part—that is, a central or medullary portion—which, when present, may run through the whole length of the fibre, or it may only appear in detached portions. It has been found, however, that wool which exhibits this medullary portion is generally stiff and more of a hairy nature, not so well adapted for the ordinary purposes of textile manufacture. The finest wool, that of the *cerino*, does not show any core or central medullary cells.

It is interesting to mention in passing that the spindle-shaped cells have a much greater affinity for dyes and coloring matters than the external scales. Wool which has been "extracted" or "carbonized" (that is, woolen stuff mixed with

cotton, which has been treated with sulphuric acid to remove the cotton) is found to dye a much deeper shade than the ordinary wool, for the reason that the outer scales are opened out very much and so expose the internal scales.—Ex

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.

Pischer & Son are erecting a mill at Causapscaal for the manufacture of birchwood spools.

The employees of the Caldwell Woolen Mills at Lanark presented the superintendent, Wm. Boyle, with a handsome gold locket on Christmas eve.

Robert Gourlay, an employee of the Toronto Carpet Company, had his arm so badly injured in the machinery recently that it had to be amputated.

The mayor and town council of Peterboro recently visited the Canadian Cordage Co.'s works in that town in a body, and expressed themselves much pleased with what they saw.

The cutters of the Eclipse Whitewear Co., Toronto, held their first annual oyster supper, December 22. The affair was under the direction of Miss Sandford, and an interesting programme was provided.

Taylor Bros.' paper mills on the Don river, near Toronto, are to be acquired by the Imperial Paper Co., a recently incorporated company. They will make extensive alterations so as to manufacture tag and manilla board as well as news and manilla papers and bags.

Mr Dick, of the late firm of Dick, Ridout & Co., Toronto, to whom the town of Seaforth has voted a loan of \$10,000 free of interest for 20 years in consideration of his re-starting the Van Egmond woolen mills, agrees to invest \$12,000 in the mills. He is to employ 50 hands from the start.

According to a statement made by Saulnier, DeCelles & Altman, proprietors of the Union hat works at Brockville, there are at present only seven hat factories in Canada—at Brockville, Toronto, Marieville, St. Johns, Montreal, Hamilton and London—and of these only the three first mentioned make felt goods.

The Hoffman-Corr Manufacturing Co. have established a warehouse and factory in Toronto, where they intend to manufacture hammocks, and to handle rope, twine, and thread, cotton duck, yarn, warps, wick, waste, bags, excelsior, moss, tow, hair, tapes, fibres, braids, oakum, nets, wadding, batts, awning, stripes, burlaps, flags, etc. The business will be under the management of F. J. Purfill.

The Campbellford Herald says the Trent Valley woolen mill has been working overtime for several weeks to keep pace with its orders. The mill has been over twenty years in operation, and it has a record which few industrial establishments can boast of, in not having to close down once during that long period. It is under the management of G. E. Burrows.

T. Eaton, of Toronto, is said to be at the back of the new woolen mill, which it is proposed to establish at Georgetown.

A one set woolen mill in Nova Scotia, on a good water power, is offered for sale by advertisement in this issue of the Journal.

The new premises of the Hudson Bay Knitting Co., on Lagauchetiere street, Montreal, are almost ready for occupation. They are well situated, there being light on four sides and no high buildings across the street to obstruct it. The building is 125 feet by 80 feet, five stories high and basement. The location is one of the most central and convenient in the city. The growth of this business since its establishment in 1889 has been remarkable. In that year the company began to manufacture mitts and gloves. In two years they had to move to larger premises. In two years more they had to move again. They developed a large trade in heavy clothing, underwear, and socks, as well as mitts and gloves. In 1895 they had to move again to larger premises. These have again proved too small and now they will have 60,000 feet of floor space in their new factory. They carry a full stock in Winnipeg, and do a large business in the Northwest. Among their specialties is a new leather tanned by a pure vegetable process, which they use in the production of their goods.

The proposed linen mill at Dundas seems likely to be assured. John K. Kamerer, of Hamilton, has offered to the Dominion Linen Mills Co., to equip the space required in the old cotton mill, which he owns, with line shafting and pulleys, steam heating apparatus, electric dynamos and lighting apparatus, all ready for their looms, and to give them a lease for five years, for all of which he is to receive a nominal stock consideration, as may be agreed on by the directors, \$5,000 being suggested as the amount. The proposal is to establish a factory having 50 looms and 50 hands to manufacture household linens, including towels, damask table covers, doylies, etc. It is proposed at the outset to import the linen yarn, bleached, ready for weaving. As the business grows Canadian and Irish flax will be secured, and the whole process of manufacturing done here. The capital of the company is placed at \$50,000, most of which has been subscribed. Dundas is asked to subscribe \$10,000. Bracebridge is very anxious to secure the industry, and is said to have offered to raise \$50,000 for the purpose.

It is the intention of the proprietors of the King of the Road brand of overalls, smocks, etc., at present controlled by R. J. Whittle & Co., wholesale dry goods merchants, Winnipeg, to erect a building this year for the manufacture of these goods. At present they occupy the top flat of the Imperial Dry Goods Co.'s building. They have a full equipment of sewing and cutting machines, among the latter an electric machine, weighing only 25 lbs. and arranged to work anywhere upon the 80-foot table upon which it stands. By means of a vertical, reciprocating knife, driven at great speed, it cuts with facility layers of cloth up to four inches in thickness. Four bales of cloth may be spread on the table, each ply being 80 feet long, and upon the top the succession of patterns. These are clipped out with lightning rapidity, the operator handling the cutter with one hand. One man can mark the cloth and cut for the output of the firm, which at present amounts to about 840 pairs of overalls per day, and which keeps a staff of 50 girls and an equipment of 44 sewing machines busy. James Love is the manager of the business.

The felt mill at Dundas, Ont., under the control of J. F. Morley, late of the Canada Woolen Mills Co., pending the installation of felt machinery, is running on blankets, and has ten broad looms in operation on that class of goods.

G. Ferguson, an expert in lace manufacturing at Nottingham, England, is coming to Canada in May or June, and wants to know what opening there is for the establishment of a lace factory. He claims to have worked his way up from the bottom to be an expert. He is in communication with the Canadian Manufacturers' Association over the matter. There is at present no lace factory in Canada, and such an addition to our textile manufactures would be very welcome.

The Streetsville woolen mills, operated by A. W. Brodie and conducted in Mrs. Brodie's name, have closed on account of financial difficulties. The mill had been standing idle for some time, and about 15 months ago was purchased by Mr. Brodie, who put in some new machinery and has since then been making blankets. The liabilities are understood to be in the neighborhood of \$25,000, but there is little at the mills that the creditors can realize upon, as the sheriff recently seized what stock there was for the payment of wages. The stock was not sold, however, as the money for wages was advanced on its security. Thos. Long, of Collingwood, holds a mortgage on the mill as security for the purchase money, he having sold to Brodie. The mill is a five set one, and some 50 or 60 hands have been employed, who are in the meantime thrown out of work, though it is hoped some arrangement may be come to by which the mill may go on with Mr. Brodie, who is a good practical man, as possible manager. As the mill is provided with automatic sprinklers steam is being kept up to protect the property. The Ontario Bank has a claim, and a number of the wool men in Toronto are creditors. Mr. Brodie, with his father, at one time operated a woolen mill at Peterboro, but some years ago removed to Hespeler where they ran the big mill with much success. When the Canada Woolen Mills Co. was formed the mill was sold to that combination, and the estate of Mr. Brodie, sen., who is now dead, is understood to have an interest yet in that company. A. W. Brodie was in Toronto for some time, and about 15 months ago went to Streetsville. Lack of capital and business methods is said to be the cause of the present difficulties.

We have received a very serviceable calendar from Reiche & Co., tops, noils, yarns and wool of Bradford, Eng., through their Canadian agent, James A. Cantlie, 22 St. John street, Montreal.

James A. Cantlie, Montreal, has been appointed Canadian agent for Reiche & Co., Bradford, Eng., manufacturers and dealers in tops, noils, yarns, wool, rags, etc. Mr. Cantlie is also Canadian agent for Apperly, Curtis & Co., Strand, the Mirfield Mill Co., and other manufacturers of woolen, cotton and other textile goods in England and Germany.

C. A. Meincke, dealer in heavy chemicals and acids, 97 St. James street, Montreal, has taken into partnership, John G. Young, formerly of the Canada Paper Co., and will continue and extend the business under the style of C. A. Meincke & Co. Mr. Young's knowledge of the requirements of paper mills will no doubt be put to good use in his new sphere and will be the means of increasing the already large business which Mr. Meincke has worked up. The firm are special agents in Canada for the Merrimac Chemical Co., of Boston.

ORNAMENTED FISH SKIN DRESSES.

At an exhibit of the North Pacific Expedition, on view recently in New York, were a number of fish-skin dresses, elaborately ornamented. They were collected from a tribe of skilled artists in the Amur regions of East Siberia by Dr. Berthold Laufer. These people are very illiterate and live in a primitive state, but they are masters of decorative art. The Gold is the name of this tribe and among the several specimens of their household and wearing apparel were fish-skin dresses, the work of the women of the tribe. The subjects of their designs are principally drawn from the rock and the fish. Women are the exclusive wearers of these fish-skin garments, which are highly ornamented with cut-out pieces of fish-skin, usually blue in color. A detailed study of the marvellous ornamental productions of this tribe of Amur artisans would yield the seeker after fresh and original designs for decorative purposes a rich field for selection. An illustrated memoir on the Decorative Art of the Amur Tribes, by Dr. Berthold Laufer, has been issued by the American Museum of Natural History, New York.

AN IMPROVED SHUTTLE CHANGING MECHANISM.

An improved mechanism for supplying fresh shuttles to looms on the failure of the west and discharging the spent shuttle, has been recently brought about, says The Indian Textile Journal. It consists essentially in constructing the revolving box with a loose side at one or both sides of each shuttle chamber, which as the box rotates, engages with and is drawn open by a catch to release the spent shuttle, and also in the next position to receive the fresh shuttle, and is held in normal or closed position by a spring to retain the shuttle in position. The shuttle box is built up on a spindle with preferably four shuttle chambers, each of which is preferably formed of two sides bolted to a bracket or plate on the spindle. One side is preferably fixed, and the other is mounted on a pivot or spring or otherwise so placed that it can be drawn away from the other side and the chamber opened. If desired, the two sides can be connected so that the two may move to or from each other at the same time. The spindle is fitted at each end with plates or discs fitted with arms or projections to which the chamber sides are affixed. A spring is placed in any convenient position to hold the side or sides in normal position. Instead of metal plates or brackets on the spindle, a wooden centre may be employed, to which the chamber sides may be affixed. The fixed sides of the chamber are provided with swells to retard the movement of the shuttle when it enters the box. Below the box are pivoted two catches to engage and draw back the pivoted sides of the chambers as the box rotates. On the shaft of the pusher which feeds the fresh shuttles to the box, or otherwise connected thereto is placed a finger or lever to engage and release the catches every time the pusher is operated to permit of the further rotation of the shuttle box. The pivoted catches may be connected by a rod or link to be moved or released together.

—As a good method of brightening, especially black dyed yarn, the Zeitschrift fuer Farben and Textil Chemie recommends the following: 450g potato flour or starch are well boiled up with 450g lard, and added to the brightening bath at 60–70° C., and the yarn given about 5 turns. An addition of some Turkey-red oil to the brightening bath is recommendable.

A NEW DYESTUFF.

The Cassella Color Co., of New York and Montreal, have placed on the market a patented dye known as Cyanole AB, of which they give the following note: This possesses all the valuable properties of our well-known Cyanole FF, pat., being, however, somewhat less brilliant in tone of shade. It is noticeable on account of its level dyeing properties, its fastness to light, alkalis, soap and sulphuring, and on account of the fact that its shade is not affected by artificial light.

In wool dyeing use 10 per cent. Glauber's salt and 4 per cent sulphuric acid. A somewhat larger amount of acid effects a complete exhaustion. It can also be dyed upon a chrome bottom. Copper vessels affect the shade slightly. For silk dyeing use a small quantity of sulphuric acid in a boiled-off liquor bath. For dyeing wool and silk together, dye at a temperature of 140° F. with the addition of sulphuric acid. Cyanole AB does not dye cotton, hence the color is very useful for the production of two-colored effects.

NEW CALICO PRINTING PROCESS.

It is reported that important developments are impending in connection with a new process of calico, linen, woolen and other printing, in certain styles which have hitherto been a source of difficulty and expense to the printers, who use engraved copper rollers for the production of the various designs and colorings. Under the new process, practically any width of cloth, both designs and borders will shortly be printed at one operation, direct from the plate, in place of a deeply engraved copper roller. The invention, it is said, has been acquired by a Lancashire syndicate, who are already working and producing styles and designs in printed dress goods, tapestries, furniture cloths, etc., which have previously been done by hand at a great initial cost and at a slow rate of production. The expense of equipping works for this invention is only about one-fourth that of the works using the old methods of calico printing, and though it is only intended at present to produce such bordered styles as are indicated above, early arrangements will be made to do all classes of textile and fabric printing. Negotiations are in progress for the formation of a company to work the process on an extensive scale in Great Britain, and also in the United States and on the continent.

THE GLOVE INDUSTRY.

The glove industry owes much of its importance to a society of handcraftsmen known as glovers. They were organized in France as early as 1190, and in Scotland the glovers of Perth were incorporated in 1165. This society not

only promoted the growth of the trade, but contributed largely to improvements in the construction and material of the glove. It took upon itself the task of ensuring honesty in workmanship and of aiding in the regulation of the trade. As early as the fifteenth century these glovers secured the enactment of laws favorable to the glove trade in their respective countries. In the early part of the seventeenth century a company of glovers was organized in London, and from that time this city has been a centre of the glove industry. In Ireland the manufacture of gloves was formerly very extensive, Limerick, Cork and Dublin having thousands of people employed in this occupation. The Limerick glove was of most exquisite texture, and was manufactured principally from the skin of the very young calf, lamb or kid. So delicate was the material that it is said that one of these gloves could be placed within a walnut shell. The industry, after enjoying a very prosperous era, declined, and is now of no importance.

—The project for the amalgamation of the Japanese silk spinning companies has been finally agreed upon. The incorporated company is to commence business with a capital of 3,780,000 yen.

—The great dyeing works of Japan are at Kyoto, where the Color Guild, managed by the president of Kyoto University, Mr. Kinoyita, who shows the greatest interest in the dyeing works, has now established a museum in which a collection of good dyeing stuffs is permanently exhibited. The industry is, in the opinion of experts, still capable of vast extension. The Japanese possess an excellent taste for designing patterns, as is well known.

To Manufacturers. A practical man, with thirty years' experience in making Felt Hats—both soft and stiff—wishes to meet Capitalist with a view to establishing a Hat Factory near Toronto or Montreal. Address: "B. J." c/o Canadian Journal of Fabrics, Montreal.

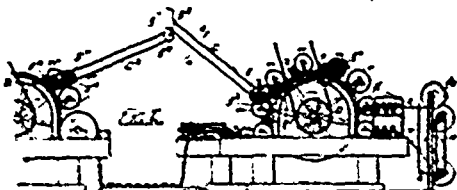
FOR SALE.—ONE SET WOOLEN MILL—Sited in Nova Scotia. Good water power. One Broad, three Narrow Looms. Good trade established. Address, "S. O." Canadian Journal of Fabrics, Toronto, Ont.

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Nine 45 inch Revolving Top Flat Cards, English Make.

These Cards have never been used, and will be sold at a discount for cash to an immediate purchaser.

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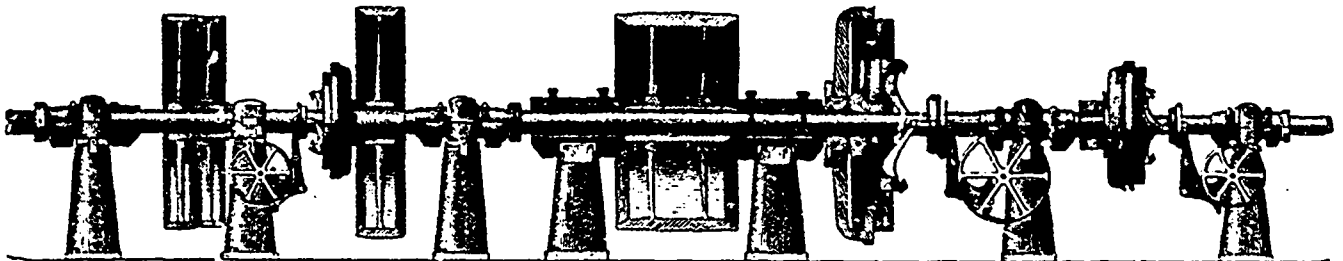
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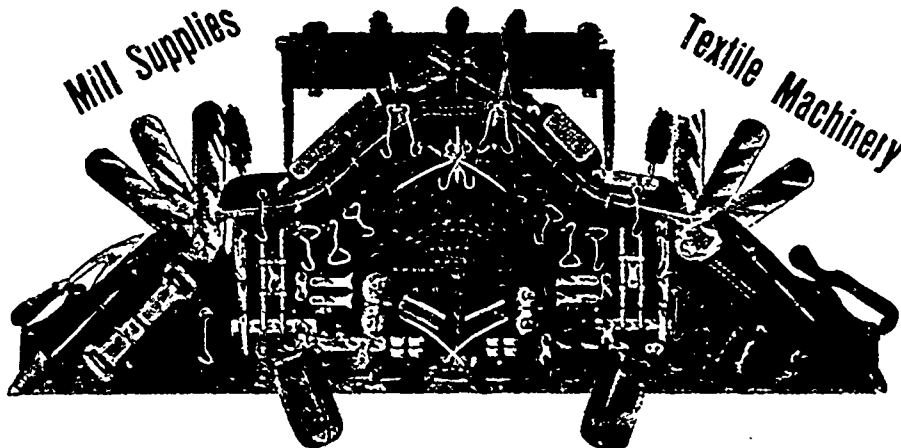
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—The efforts of the members of the Lancashire Cotton Growers' Association to emancipate themselves from the United States' raw supply have been extended to Jamaica. The association has voted a large sum of money to be devoted to cotton growing in that island on an extensive scale. It is reported that a large area in Jamaica will be planted with cotton next season.

—The American Lumberman regrets the passing of the old fashioned blind, or Venetian shutter, and the substitution of cloth shades, which it calls a fad. It thinks there will be a return to the slat blind, for what is more comfortable than to sit in an easy chair by an open window protected by blinds which would let the air through but exclude the sun and summer showers.

TEXTILE PUBLICATIONS.

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

- Loom Fixing; a handbook for loom fixers working on plain and fancy worsteds and woolens; containing chapters on shuttles and bobbins, and their management; head motion; putting in warps; filling; adjusting and starting new looms; chain building, etc.; 104 pages, by Albert Ainley\$1 00
- Technology of Textile Design; explains the designing for all kinds of fabrics executed on the harness loom, by E. A. Posselt 5 00
- Structure of Fibers, Yarns and Fabrics, the most important work on the structure of cotton, wool, silk, flax, carding, combing, drawing and spinning, as well as calculations for the manufacture of textile fabrics, by E. A. Posselt 5 00
- Textile Machinery Relating to Weaving, the first work of consequence ever published on the construction of modern power looms, by E. A. Posselt..... 3 00
- The Jacquard Machine Analyzed and Explained; explains the various Jacquard machines in use, the tying up of Jacquard harness, card stamping and lacing, and how to make Jacquard designs, by E. A. Posselt..... 3 00
- Textile Calculations; a complete guide to calculations relating to the construction of all kinds of yarns and fabrics, the analysis of cloth, etc., by E. A. Posselt.. 2 00
- Wool Dyeing; an up-to-date book on the subject, by E. A. Posselt 2 00
- Worrall's Directory of Cotton Spinners, Manufacturers, Dyers, Calico-printers and Bleachers of Lancashire, giving the mills of the British cotton district, with number of looms and spindles, products of the mills, cable addresses, etc\$2 00

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

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

CHEMICALS AND DYESTUFFS.

Business, as usual, is very quiet. There are few enquiries, which is usual at this season. No changes in prices.

- Bleaching Powder\$ 1 80 to \$ 2 00
- 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
- Bich. potash 0 7½ 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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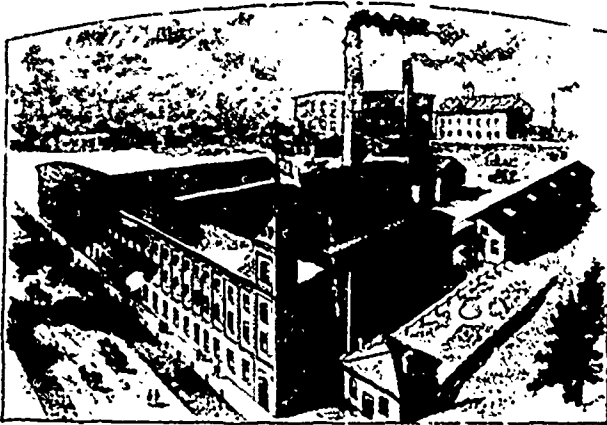
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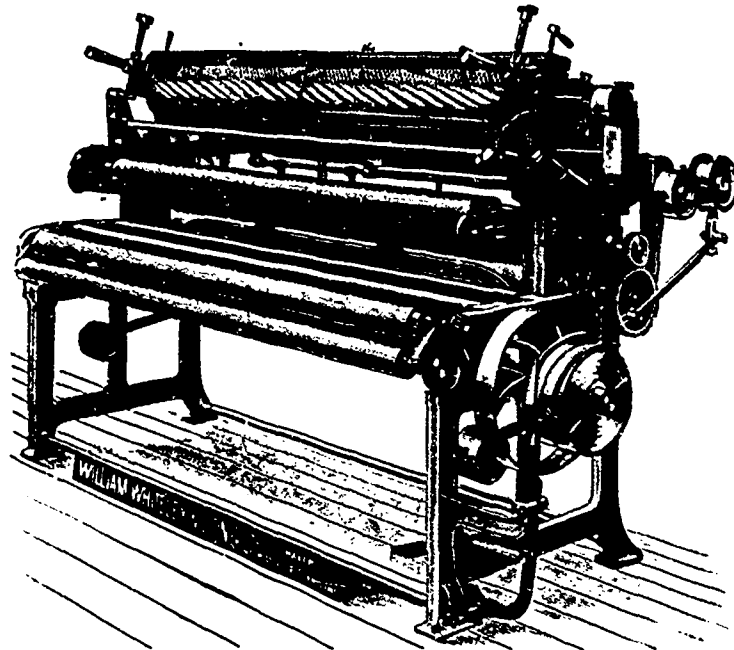
CHAS. W. HAGAR, General Manager

There are now in operation in Texas ten cotton mills and one woolen mill, the cotton mills producing ducks, drills and sheeting ranging respectively from seven to nine ounces, 28 1/2 to 32 1/2 and 25 to 400 yard cloth.

—In selecting a warp, yarn, the error ought to be on the right side and thus allow for any extra strain which might be put upon it. An experienced person will not rely entirely upon a pulling machine to test the strength of a sample yarn, as in this case the breaking strain is for a number of threads collectively; but he will test single threads both for strength and elasticity. Other defects, such as slubs, snarls, singles, etc., all of which, if they are numerous, would tend to impede the progress of the weaver, reduce the output and deteriorate the quality of cloth. A yarn buyer should be able to discriminate between soft, medium and hard spuns, and know the characteristics of ring and mule yarns, so that he

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may determine which is most suitable for the class of "sizing" and "finishing" required for the cloth to be made.

—The commissioner for the British Central Africa Protectorate states, that at an agricultural show recently held in Blantyre (David Livingstone's mission station), one of the most noticeable exhibits was cotton, excellent samples of which were shown. An expert opinion was given to the effect that cotton such as that exhibited would fetch a higher price in the home market than American cotton. It is estimated that a price of 3d. per lb. in Blantyre would cover all plantation expenses and give a profit to the grower. A report by the head of the Scientific Department of the Protectorate states that from the progress made by the one-year-old cotton plants, it is evident that they delight in the abundant moisture of the marshy situation they occupy, and that in two years a fair crop may be reaped from the plantation.

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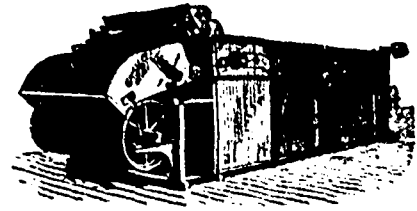
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THE WOOLEN MARKET.

The heavy losses incurred by sheep farmers in Australia through the terrible droughts with which that country has been visited for a number of years past are making themselves felt wherever the manufacture of woolen goods is carried on, so much so, in fact, that not only manufacturers and wholesale houses, but retailers, consumers and every one interested in woolen goods are commencing to realize that, for some time to come, the prices of woolen yarns and manufactured goods must undergo considerable advances. The death rate among the Australian sheep has been so astounding that in many instances thousands of these animals that formerly brought as high as \$10 a head have sold at 30 cents, their owners being willing to sell at any price lest they should die on their hands. A heavier advance in prices of yarns and woolen goods would have taken place last year but for the fact that certain stocks of wool were held by wool speculators. To-day these stocks do not exist and the demand for the raw material is greater than ever. As a consequence the advance in prices will apply to all descriptions of woolen goods and a large proportion of this advance will have to be borne by the low and medium grades as the finer yarns are limited in supply, which will necessitate the larger use of inferior qualities. Those manufacturers who have not already secured their necessary supplies have a poor outlook before them, as there is absolutely no prospect of any reductions being made in the price of their raw material, while there is every prospect of a still further increase. The scarcity of Australian wool which now prevails will be an advantage to sheep raisers in other parts of the world, who will take advantage of the increased demand to the best possible account.—Shareholder.

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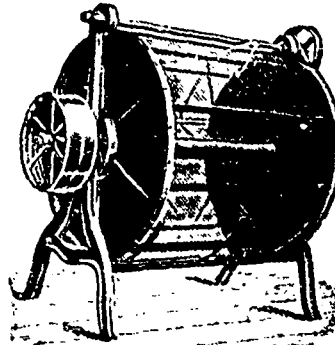
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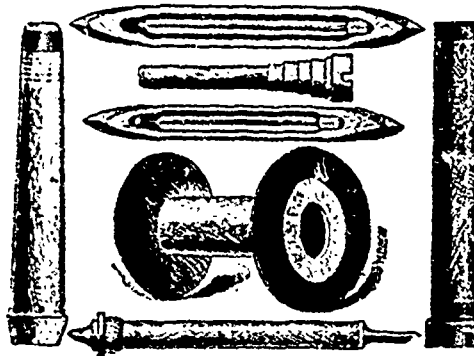
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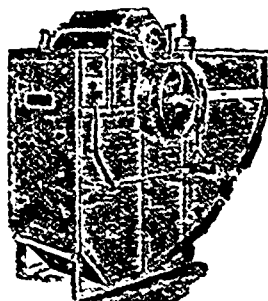
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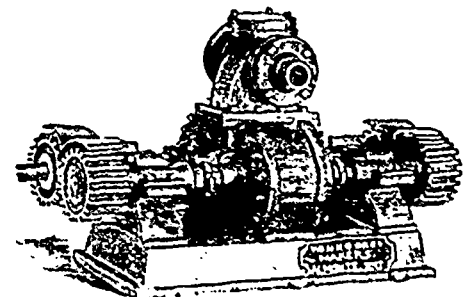


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 Equipment of mills of every kind. **YOUNG BROS., Almonte, Ont.**

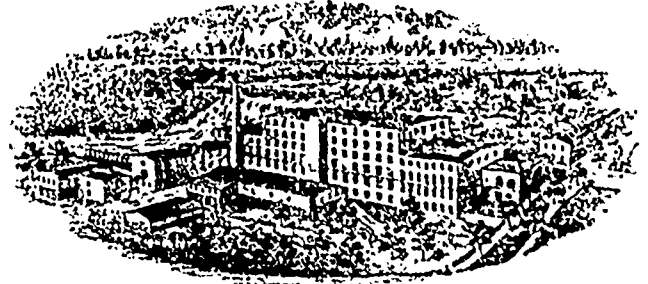
—The American Woolen Co., in an advertisement, give a list of twenty-seven mills under their control. All are in the six New England States, except one, which is in New York. There are four mills in Providence, three in Lawrence, and two in Fitchburg.

—Manufacturers of woolens make a big mistake, says a writer, when they employ men on their shears who do not understand their business. I saw 32 pieces boxed up recently to be returned owing to uneven shearing, and about 30 per cent. of claims are caused by careless work on this machine.

—J. & P. Coats, thread manufacturers, have issued their annual report, showing the net profits for the past year at £2,599,254. This allowed the payment of a dividend of 20 per cent., the same as last year, and the setting aside of £100,000 for an employees' pension fund, besides having a considerable balance.

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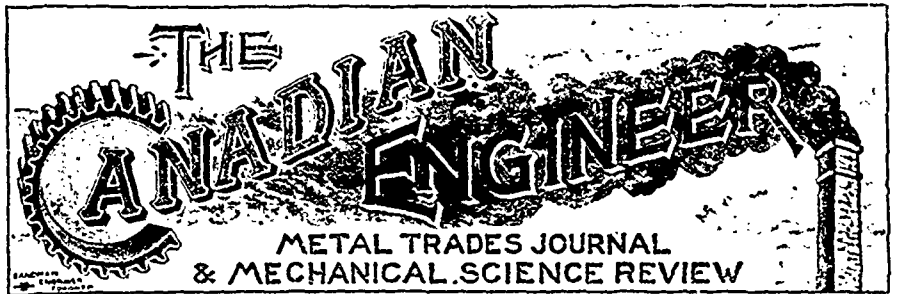
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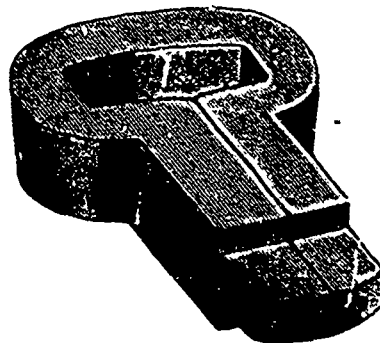
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CUTTING BELT HOLES IN THE FLOOR.

To those who have occasion to belt machinery through floors, a few remarks on the subject may not come amiss. Of course, most machine operators and mechanics have methods of their own for doing these things but I have often seen men go at such jobs in such a hap hazard way that a sort of an "Oh, that's good enough" job is apt to be the result. There is a right way to do everything, and the right way is always the cheapest in the end. Belt holes are often cut through floors as much by guess as anything else, and when you get through and find you are not in line, then the hole has to be made twice or three times as large as is necessary before a belt will run through it. The result is an unsightly job that will always be an eyesore to the one that did it.

The first item of importance is placing the machine to be belted. As a general rule, a machine cannot be put in any old place, but must be set in just exactly a certain spot, in order to not conflict with other machines, posts, or other obstacles, sometimes it is necessary to have it right in front of a certain window, in order to get light. So first and foremost, place your machine just where you want it, then go below and see that the counter-shaft and the drive belt are not going to conflict with any other shafting, belting, beams, or anything of the kind. Also see that you are going to have room on the line shaft to put the drive pulley, for where the pulleys are pretty thickly distributed on the line shaft and where there are hangers and couplings to look out for, you cannot always put a pulley where you would like to. These obstacles can generally be overcome by moving the pulleys on the countershaft, or if necessary, by moving the machine a few inches one way or the other.

After having seen to these matters, the next step is to line the machine with the line shaft. In order to do this, a line should be drawn on the floor directly over the line shaft. This may be done by squaring from the floor to the centre of the line shaft, boring a couple of one quarter inch holes up through the floor at each end of the shaft, drawing a tight chalk line from one to the other, then plumb from one end of the cylinder or arbor on the machine, to the floor, and move the machine till the other end of the cylinder plumbs to the floor the same distance from the chalk line that the first end did. When this is right the machine may be bolted down.

It is not advisable to put the countershaft directly under the machine, as this gives such a short belt that if the machine is a planer or other machine requiring a good deal of belt power, it is necessary to run the belts very tight, which is hard on the belts and hard on the bearings. It is better, therefore, to put the counter a few feet one way or the other from directly under the cylinder, and it should be toward the feeding in end of the machine if possible, so the belts will draw from under side of pulleys, and it should be as far in that direction as possible without having it where the belts will be in the way as they come up through the floor.

The counter may be put in proper position by plumbing from the centre of end of cylinder to the floor and boring a one quarter inch hole through the floor, then measuring back four, six or eight feet, as the case may be, and put up the counter so the edge of the driving pulley on the counter will come directly in line with the hole through the floor, providing the driven pulley on the cylinder above is flush with the end of cylinder, as is generally the case. Then line the counter with the line shaft by means of a long rod or a steel tape if you have one, so that both ends of counter will be just the same distance from centre of line shaft.

Next comes the holes through the floor. You have already plumbed from centre of cylinder to floor and bored a small hole through. You also have the distance from cylinder to counter, which we will say is 60 inches along the floor. Now get the distance from centre of cylinder to floor, which we will say is 36 inches, also the distance from centre of counter to floor, which we will call 24 inches.

Next select a clean spot on the floor, and draw a line six or seven feet long, with a straight-edge. This will be top of floor line. Draw another line parallel to it, two inches below, if the floor is two inches thick. Now at the right hand end of floor line, square up 36 inches, which will be centre of cylinder. Then measure back along floor line 60 inches, and from this point square down through floor lines 26 inches, which will give centre of counter.

We will say the diameter of driving pulleys on counter is 20 inches and the diameter of driven pulley on cylinder is six inches. Draw a line, the diameter of driven pulley, across the end of 36th inch line at an angle of 45 degrees with floor line, also a line 20 inches (the diameter of driving pulley) across the end of 24 inch line, at the same angle, so that the two pulley diameters will be parallel with each other. Then with a straight edge draw the belt lines from outside to outside of pulley diameters. Where these belt lines intersect the floor line will be the centre of belt holes; or in other words, by measuring back along the floor, the centre of the first belt hole will be found to be 25½ inches from line of cylinder, and the centre of second belt hole 20 inches from the first one. It takes but half as long to lay out this outline on the floor as it has taken to explain it, and when it is done there will be no mistake about location of belt holes.—Woodworker.

WOOL MARKET.

The first series of colonial wool sales for 1903 will open in London on Jan. 20. It is many a long day since the London market was so completely cleaned up as it is now, and it appears all but certain that the quantity to be offered will only be from 100,000 to 115,000 bales, which is little more than half the total available at the corresponding series at the beginning of 1902. This is largely due to the drought in Australia, which happily seems to be about over, as news comes of a copious and widespread rainfall. Prices are likely to rule high under a brisk demand, and British wool is now ½d. a pound dearer than it was two months ago.

Montreal—Market firm with an advance of 5 to 10 per cent on all fine wools since the first of the year. The market is almost cleaned out of stocks of fine imported wools and medium of good grades are in demand at high limits. The demand from the American market has made this market a little panicky.

Toronto.—Conditions are unchanged since our last report. Dealers are awaiting the result of the forthcoming London sales. In fleece, offerings are light. Washed is quoted, 14 to 15c., unwashed, 7½ to 8½c. There is considerable pulled wool in stock, with moderate enquiry from the home mills. Extras, 18 to 19c., supers, 14 to 15c.

In the United States wool market trade is exceedingly quiet. Manufacturers do not quite know what lines of goods will be in demand, and therefore cannot tell what kinds of wool they will require. What wool is being sold brings full prices, and dealers are quite willing to sell at quotations. Fleece is firm in Boston at 31 to 32c. for No. 1 and 2. Unwashed, 20 to 27c.

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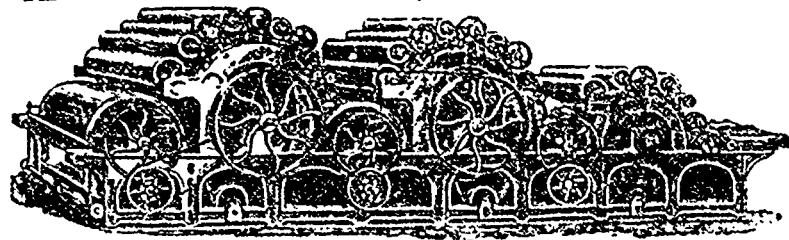
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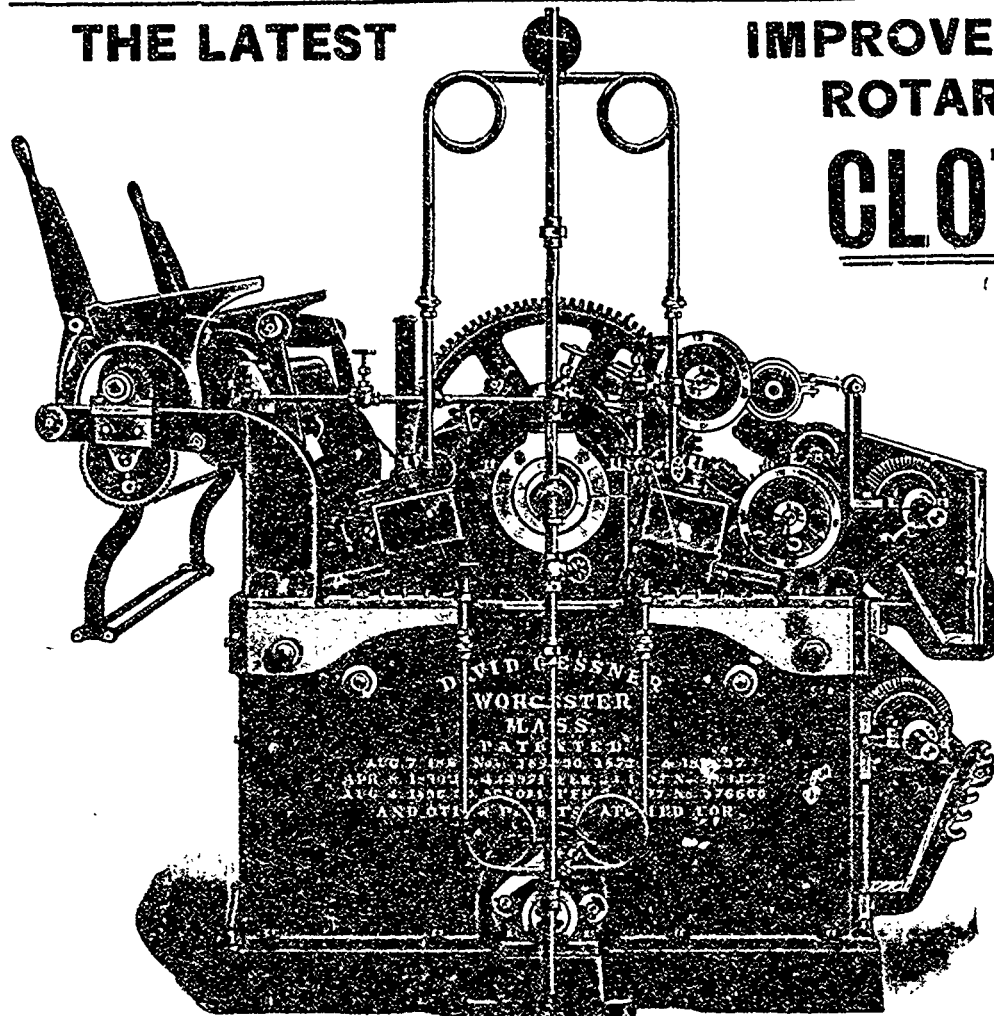
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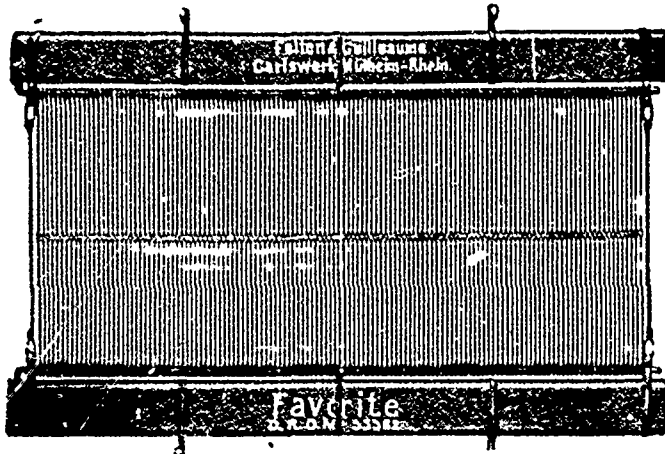
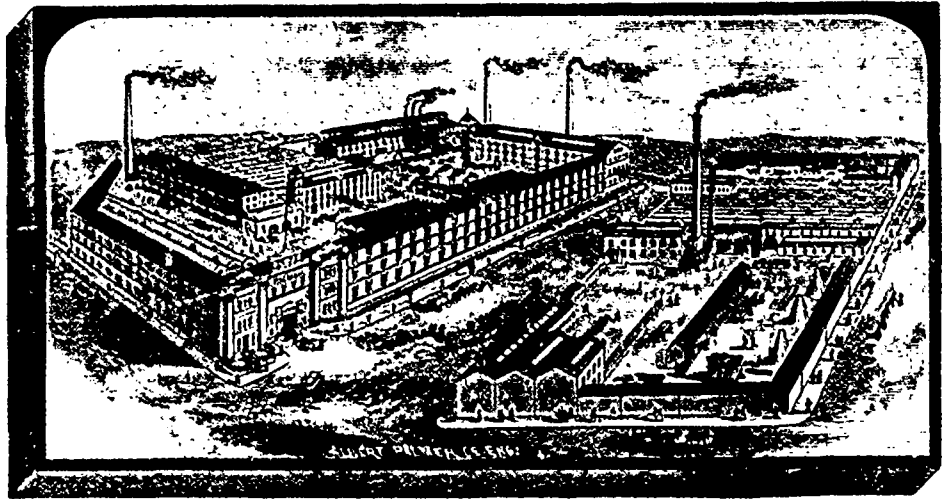
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