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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XXI. TORONTO AND MONTREAL, DECEMBER, 1904. No. 12.

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

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CONTENTS OF THIS NUMBER

A NEW TEXTILE INDUSTRY FOR CANADA.

In the June number of the Canadian Journal of Fabrics an account was given of a comparatively new textile industry which has been established in the United States—the weaving of fabrics from asbestos fibre. The special interest this possesses for Canadians is that the raw material of this American industry comes from Canada, and that the industry might have been first established in Canada better than in any other country. As the uses of asbestos fabrics are continually multiplying we would advise our capitalists to look into the matter, for a large field is open here not so much for the supply of the home market as for the export of asbestos manufactures to foreign countries. The natural advantages Canada has in developing this industry are first, that we have the raw material of the best quality, and in unlimited quantity; second, that this raw material is better suited for weaving than the asbestos so far discovered in any other country; and third, that we have the skilled labor necessary to make the industry a success.

Asbestos is a mineral that is widely distributed over the six continents, but it so happens that only two countries have so far been able to produce it in commercial quantities and qualities, namely, Canada and Italy. The United States has plenty of it, but it has no fibre, in fact most of it goes into powder under the manipulating required to work it up. The Italian variety has a fine fibre, but while eminently suitable for some purposes it is too weak and brittle to weave into cloth. Only the Canadian asbestos is strong and flexible enough in fibre to stand making up into a fabric that will hold together. These points are very important in considering the establishment of a home industry.

As is commonly known, one of the great and growing uses of asbestos is for fire-proof cloth or fire-proof paper, and in the latter item alone we import thousands of dollars worth of goods made from raw material taken from the province of Quebec. The United States or British manufacturer pays freight on the raw material from Canada and ships the manufactured goods back to Canada at a good profit after paying the duty. Surely here is a neglected field for Canadian investment. About twenty or twenty-five years ago two small factories were started in Quebec for working up asbestos, but the machinery was very crude and moreover the demand for asbestos goods was less than a tenth of what it is to-day. In one case at least the factory management was not what it should have been, and the industry died out. The situation now affords a much larger and more profitable field, and there should be little doubt about the result to an enterprising Canadian manufacturer, seeing that new uses for goods made from asbestos—the only product in nature known to be indestructible by fire—are being created by progress in other spheres of industry; and that we have in Canada the only raw material fit for some of these applications.

It will be interesting to note that whereas the production of asbestos in the United States in 1903 was only 887 tons, valued at $10,760 (a decline on 1902 when the amount was 1,005 tons, valued at $16,200) the production in Canada in 1903 was 34,651 tons, valued at $984,836. Of this total value, $116,866 worth went to Great Britain, $709,381 to the United States,

$17,500 to Germany, and $111,029 to other countries. If the raw material exported is worth in round figures a million dollars the value of the same material made up and shipped in the manufactured form would mean the addition of four or five million dollars to the exports of Canada even in the present stage of its development.

An interesting pamphlet dealing with asbestos, from the geological point of view, was published last year by the Geological Survey of Canada, the author being Dr. R. W. Ellis. From this it appears that of the nineteen mines operated to a greater or lesser extent in Canada all but two are in the province of Quebec. An idea of the growth of asbestos production considered as a mining industry, may be gathered from the fact that the output of this country has grown from 380 tons in 1880, valued at $24,700, to 40,416 tons in 1902, valued at $1,148,319. The average value has varied from $26 per ton up to $127 per ton. Owing to the varying uses of the material a much lower grade of rock can be turned to account now than formerly, hence the average value has been reduced in recent years, but the light grade fibre maintains its price, the market value of No. 1 crude rock ranging from $150 to $200 per ton. Those interested may be able to get information also from J. Obalski, Inspector of Mines for Quebec, who refers to the industry in detail in his annual reports.

* * *

THE SILK INDUSTRY OF THE UNITED STATES.

The historical pamphlet recently published by the Silk Association of America, and noted elsewhere in this issue, contains an instructive account of the growth of the silk industry in the United States. As early as the middle of the 16th century an attempt was made to establish the industry on this continent, when Cortez experimented in sericulture among the Aztecs in Mexico. In 1608 James I. introduced the silk worm to his royal estates in England, and a short time afterward he recommended the Virginia Company to raise silk worms rather than tobacco, "which," said he, "besides much expense, bringeth with it many disorders and inconveniences." Misfortune overtook the attempts that were made to comply with the royal command, and another more peremptory demand in 1622 produced no more result. From this time on, spasmodic attempts were made to raise silk in the colonies but never amounted to much. At the time of greatest activity before the Revolution the export of raw silk averaged only 500 pounds per annum.

After the Revolution several states began paying premiums and bounties for the planting of mulberry trees, and in 1826 the federal government encouraged sericulture by issuing a manual on the growth and manufacture of silk. For about twenty years the sericulture bubble swelled. The growth of the mulberry was undertaken in various states, and magazines were published in the interests of the industry. "No competition," said one of these papers, "need be feared for years to come, if ever. The bounty offered on silk by the State of New Jersey will pay all the expense of making it, and leave the whole of the crop clear profit. The bounty granted by Pennsylvania will do even more."

In 1844 the bubble burst. Competition with Italy in the production of raw silk was impossible on account of the price of labor. Since 1844 few attempts have been made to raise silk on this continent, but the attention of the United States has been turned rather to silk manufacture. The idea of successfully manufacturing from imported raw material was scorned at first, but it gradually gained ground until in 1857 the government withdrew the 15 per cent. duty on raw silk, thus encouraging the manufacturer with duty-free raw material. This change in the tariff has been characterized as one of the few that did little harm at the time and that has done good ever since.

The duty on silk goods at that time was 24 per cent., but during the civil war it was raised by a series of advances to 60 per cent., and the result was a great stimulation of manufacturing. Power-loom weaving was introduced and the range of goods manufactured was increased until in 1870 the silk goods manufactured in Paterson, N.J. alone, were valued at over four millions. In 1872 the Silk Association of America was organized. The Centennial Exposition of 1876 was a great stimulus to the silk industry, as by it the people of the United States discovered that they were able to supply their own wants in this line, and the nations of Europe recognized a coming rival.

In 1883 the duty on silk manufactures was reduced from 60 to 50 per cent., and it has remained at that figure ever since. From 1893 to 1897 there was a period of stress for the textile industries, and a time of uncertainty with respect to tariffs, but in the latter year the duty was fixed at an average of 50 per cent. on all silk manufactures.

By 1900 the silk industry had obtained third place among the textile industries of the country, and the United States had become the second silk manufacturing country of the world.

Not only has the silk manufacturer in the United States made a success of his business in his own country, but he has crossed the line and established the industry in Canada, the two silk mills of this country having both been started as branches of United States concerns. The number of silk power looms in the United States in 1904 is 56,225, of which 47,725 are operating on piece goods, and the balance on ribbons and other narrow fabrics. The number of throwing spindles is 1,250,000, and of accessory spindles, 1,128,000. The industry employs about 75,000 hands, and the annual value of the products over $100,000,000. It will thus be admitted that the history of the silk industry of the United States is a triumph of consistent protection from government combined with the inventive skill of those engaged in the industry. A similar policy pursued on this side of the line with regard to the woolen industry would make Canada one of the greatest woolen manufacturing countries of the world.

—The Japanese Government has placed some very heavy orders for wool blankets with Old Country manufacturers, some of whom will be kept running for months on these orders alone. As the Japanese appreciate quality, and as Canadian long wools are unexcelled by those of any country in the world for blanketing, we would suggest that samples be sent through the Canadian Government's commercial agent at Yokohama to show the contracting officials of the Japanese army what Canada can produce in this line. A large Government order distributed among our mills without political favor might help the woolen situation considerably at this time.

* * *

—As a result of improved demand for manufactured goods and the curtailment of stocks the Canadian cotton mills, now that a large cotton crop is assured, are running to their full capacity. The manufacturing outlook is better in the United States for the same reasons, while in Great Britain many of the mills are now running overtime. The Government's estimate of the present United States crop is 12,162,000 bales of 500 lbs. each, which if realized will be the biggest on record by about a million bales. While the New York Journal of Commerce, estimating from the reports of its local correspondents, puts it at 11,275,000 bales, estimates of other authorities go as high as 14,000,000 bales, so that whichever is nearest the mark, we can count on an ample supply of raw material for the cotton manufacturing world. The increased demand throughout the world owing to the expansion of such markets as China, coupled with the depletion of stocks while raw material has been so short during the year now closing, will make it fairly certain that prices of cotton goods will maintain their present level in most lines.

* * *

—Workers in textile mills and in the clothing, garment and other factories which make up textile fabrics are more than other mill operatives subject to the diseases and physical weaknesses that follow upon breathing the vitiated air of closed rooms. It should be more widely known among factory people that while blood is the life of the man, pure air is the life of the blood. Without a full supply of the oxygen present in free air, good health cannot be maintained, while an excess of carbonic acid gas given off from breath in a confined room where there are many breathers is an actual poison in varying degree. It is now pretty well agreed that the best cure for consumption, for example, is not medicine, but fresh air, and the most successful treatment of this scourge in recent years has been by keeping the patients out of doors in all seasons. In the winter, of course, they are well wrapped up, but the air they breathe is fresh and seems to be all the better if cold. The people of this country are spending millions every year on medicines, and hospitals, when a life in pure air and a return to nature would save the waste of funds and make strong people out of weaklings. It is true that a large factory cannot be run without bringing a number of people together in a single room, but ventilation and fresh air can be secured in almost any room at an expense that is a mere trifle compared with medicine and doctor's bills. And in those situations where fresh air cannot be got without harmful draughts, the factory inspectors should see to it that shop rooms should be prohibited from carrying on work. The right-minded factory owner or manager will not crowd workpeople into a room where they cannot work without damage to health, and the manager or owner who ignores the health of his hands for the sake of profit should be checked by the law. There are a good many small workshops—and a few big ones—in Canada where Government regulation is needed at this moment. No doubt the heads of such establishments in many cases lack rather a knowledge of the laws of health than a disposition to do right by their employees, and for the benefit of such, and all other employers of factory labor, it would be well if a leaflet were compiled for general circulation in factories, explaining in simple language why oxygen is necessary to healthy blood, and why re-breathed air is poisonous.

* * *

—As reported elsewhere in this number, a new legal move has been made in the case of the Canada Woolen Mills, Ltd., and we regret to say that the move is one which is tending to throw the affairs of the company into a stage most to be dreaded in the affairs of an insolvent company—the stage of mere litigation. In the interest of the trade we have only to repeat the counsel given in the last issue, that "as broad minded and practical business men, which Mr. Long and Mr. Benson are, these gentlemen ought to get together to effect a settlement. 'Agree with thine adversary quickly, while thou art in the way with him,' is an admonition which if followed would lead to a settlement consoling not only to the creditors but to the trade in general." It may be said that the solution of the difficulty does not rest wholly with Messrs. Long and Benson, but if a conference can be arranged between them and the referee and inspectors, any agreement which these gentlemen may reach will almost certainly be accepted by the minor creditors. It will be seen that at a meeting of the inspectors subsequent to the judgment of Justice MacMahon, the offer of $275,000 from Mr. Benson was rejected, and that gentleman's cheque of $10,000 on account was returned. This action of the inspectors was approved by the Dominion Bank which is now on record as approving of Mr. Long's offer of $253,000, and yet rejecting an offer of $22,000 more. The present legal move seeks to hold the liquidator responsible for the $10,000 which Mr. Benson deposited, unless that deposit is returned into court. It appears further that not all of the parties immediately affected were notified of the present motion before the referee, and were therefore given no opportunity of defending their position. All these things have a sinister look for the creditors, for it should not be forgotten by those concerned that every day's delay means a loss to these

creditors. This direct loss is estimated by the liquidation to be $2,900 a month. The delay in the matter of the appeal will throw the case over till probably the middle of January, as Mr. Long's solicitor has not declared his intention up to the time of writing. The moral effect on the woolen manufacturing trade of these proceedings will not be good, and we would again urge upon the parties whose interests are bound up with the trade to drop legal technicalities and come together as business men to make the best of this unfortunate affair.

METRIC MEASURES.

In view of the articles and correspondence that have already appeared in this journal on the metric system, the following letter addressed to the Canadian Engineer will be of interest.

May I be allowed space in your columns to call the attention of your readers to the Weights and Measures Bill which passed the House of Lords on May 17th, of this year, (copy is sent by Book Post).

The outside support which the Bill received is some indication of the favor with which the movement for a reform of our weights and measures is meeting on all sides. Petitions in its favor have been presented either to the Board of Trade or to the House of Lords by various bodies including 92 Town, City and County Councils, 49 Chambers of Commerce, 29 Retail Traders' Associations, 39 Trade Unions, 59 Teachers' Associations, the Inspectors of Weights and Measures in 91 districts, and several Chambers of Agriculture.

In addition to the support already quoted, 333 members of the British House of Commons have signified their approval of the reform, most of them being in favor of a compulsory measure.

The chief objection to the proposed change on the part of engineers is on the score of expense. Prophecies of total ruin to the engineering industry have been made as a consequence of the scrapping of machinery which would be necessitated by the change. That, of course, is a legitimate objection, but we must remember that in many works a scrapping process is more or less continuous, and the most enterprising manufacturers do not hesitate now to scrap machinery when they see any ultimate advantage.

While therefore, it is unwise on the part of supporters of the reform to ignore this difficulty, it is very easy for their opponents to exaggerate the expense involved; and, further, the advantages of a uniform system of weights and measures are so great and so obvious that we have to decide whether the gain would not outweigh the sacrifice.

German engineers in 1870 were confronted with a similar position, with like difficulties, but we do not hear of universal ruin as a consequence to them of the change which took place at that time.

In a paper read by Mr. Alexander Siemens (President of the Institute of Electrical Engineers), on this subject before the Royal Statistical Society on December 15th, 1903, he refers to the question of screw threads.

"As regards screw-cutting machinery," he says, "it should be known by this time that English threads can be cut with metric leading screws just as accurately as metric threads on English leading screws; all that is necessary is to buy suitable exchange wheels."

As an indication of how this reform is regarded in England by scientific men and by manufacturing firms it is sufficient to quote the names of the following who strongly advocate the adoption of the metric system:—

Lord Alverstone, F.R.S.; Lord Avebury, F.R.S.; Sir Benjamin Baker, K.C.B., etc.; Sir Lowthian Bell, F.R.S.; Sir J. T. Brunner, Sir Wm. Farrer, F.R.G.S.; Sir Michael Foster, K.C.B., etc.; Earl Grey, K.C.M.G.; Sir William Huggins, O.M., F.R.S.; Mr. W. Henry Hunter, M.I.C.E.; Lord Kelvin, O.M., F.R.S., etc.; Lord Lister, O.M., F.R.S.; Sir Oliver Lodge, F.R.S.; Sir Hiram Maxim; Sir Guilford Molesworth (Pres. of Inst. C.E.); Sir Andrew Noble, K.C.B., etc.; Sir William Preece, K.C.B., etc.; Sir William Ramsay, K.C.B., F.R.S.; Lord Rayleigh, O.M., F.R.S.; Sir Henry Roscoe, F.R.S.; Mr. Alex. Siemens, (Pres. I.E.E.); Armstrong, Whitworth & Co.; Babcock & Wilcox; Birch, J. & Co.; Birmingham Small Arms Co.; Boake, Roberts & Co.; Bovril, Limited; Briggs, Thomas (Manchester) Limited; British Mannesmann Tube Co.; Broughton Copper Co.; Brunner, Mond & Co.; Egerton, Burnett, Limited; Burroughs, Wellcome & Co.; Central Marine Engine Works; Clarke, Nickolls & Coombs; Clayton & Shuttleworth; Cleveland Bridge and Engineering Co.; Colville, David, & Sons; Crosfield, Joseph, & Sons, Limited; Debenham & Freebody; Deloitte, Dever, Griffiths & Co.; Elliman, Sons & Co.; Fleming, Birkby & Goodall; Sir Douglas Fox & Partners; Fraser & Chalmers; Gosnell, John, & Co.; Gossage, William, & Sons; Guthrie, Edwin & Co.; Harland & Wolff; Harrods Stores, Limited; Hollins Mill Co.; Horrockses, Crewdson & Co.; Imperial Tobacco Co.; Jaegers Sanitary Woolen Co.; Jenson & Nicholson; Johnson, Mattey & Co.; Jonas & Colver; Johannesburg Cons. Investment Co.; Kayser, Ellison & Co.; Lancashires Explosives Co.; Liberty & Co.; Main, A. & J. Co.; Mather & Platt; May, S., & Sons; N. E. Marine Engineering Co.; North British Locomotive Co.; Pears, A. & F., Limited; Perfecta Seamless Steel Tube Co.; Ransomes, Sims & Jefferies; Rudge-Whitworth, Limited; Ruston, Proctor & Co.; Salt, Sir Titus, Bt., Sons, & Co.; Salt Union, Limited; Salter, George, & Co.; Sandycroft Foundry Co.; Sassoon, D., & Co.; Siemens, Alex., & Co.; Simpson, Jas., & Co.; Smith's Dock Co.; Summerscales & Son, Limited; Swan, Hunter & Wingham Richardson; Tapling, T., & Co.; Thornycroft, John I., & Co.; Tyne Iron Shipbuilding Co.; United Alkali Co.; Venesta, Limited; Vickers, Sons & Maxim; Waverley Iron & Steel Co.; White, J. G., & Co.; Whiteley, William, Limited; Whitwell & Co.

In short the popular demand for the change is now so strong in England that there is little doubt that the Government will be compelled to grant the reform.

It should be remembered, moreover, in the event of the Liberal party coming into power, that the Lords Spencer, Rosebery and Tweedmouth warmly advocated the reform when the Bill was under discussion in the House of Lords.

E. Johnson, Secretary Decimal Association,

London, England.

NEW INCORPORATIONS.

The Ontario Gazette announces the following incorporations, which are of interest to the textile trade:

King Suspender Co., Limited, Toronto; capital, $40,000. To manufacture suspenders, corsets, garters, belts, purses, etc., and carry on the business of drapers, haberdashers, and general outfitters, taking over the business of the King Suspender Co. Provisional directors: Alex. McL. Macdonell and Thomas H. Barton, barristers, and Fitzgerald D. Byers, student-at-law, all of Toronto.

The John Knox Co., Hamilton; capital, $200,000. Directors:

John Knox, wholesale merchant; D. McMurtrie, commercial traveller; Alex. Finlayson, salesman; George Shambrook, accountant, and Daniel H. Smith, commercial traveller, all of Hamilton.

Grafton & Co., Limited, Dundas; capital, $500,000. To manufacture clothing, whitewear, millinery, etc., and to acquire the business now carried on by Grafton & Co. Directors: Jas. B. Grafton, and James J. Grafton, manufacturers; Wm. A. Davidson, bookkeeper, and Charles J. O'Connor, manager, all of Dundas.

Beatty, Kerr & Verner, Limited, Toronto; capital, $100,000. To carry on a wholesale and retail dry goods business. Directors: Charles W. Beatty, John M. Kerr, merchant, and Thomas H. Verner, traveller, all of Toronto.

Garton Mills, Limited, Toronto; capital, $40,000. To take over the business of the Garton Mill Co. Directors; Arthur R. Boswell, and James F. Edgar, barristers, and Alice M. McGlashan, stenographer.

The American Dyewood Co., of Pennsylvania, has been licensed to do business in Ontario to the extent of $40,000 capital. Alex. W. Leitch, of Hamilton, attorney for the company.

Coupe Manufacturing Co., Toronto; capital, $40,000. To manufacture, buy and sell knitted goods, wholesale and retail. Directors: Richard H. Coupe, gentleman; Alfred Bicknell and W. Carleill-Hall, barristers; Leigh C. Todd, accountant, and Whittaker Hill, agent, all of Toronto.

The business of John P. Black & Co, Montreal, has been incorporated, under a Dominion charter, as John P. Black & Co., Limited, with a capital of $250,000.

The Imperial Cotton Co. is decreasing its preference stock by 1,500 shares.

THE CANADA WOOLEN MILLS CASE.

As mentioned in the editorial of last issue, the inspectors of the estate of the Canada Woolen Mills, Limited, rejected the offer of George F. Benson of $275,000 for the assets of the company.

It appears that on the 29th October—after Judge MacMahon gave his decision upsetting the sale made by the official referee to W. D. Long at $253,000—W. H. Blake, K.C., solicitor for Mr. Benson, wrote to the liquidator, through his solicitors, Cassels, Cassels & Brock, reminding him of the decision of Judge MacMahon, and asking that Mr. Benson's offer be dealt with, and that it be accepted or rejected. In the event of its rejection, it was asked that the $10,000 cheque deposited with the inspectors by Mr. Benson, be returned. The inspectors met, Mr. Benson being present, and the Dominion Bank being also represented. After discussion, it was decided to reject Mr. Benson's offer, and return his cheque, which was done on the 2nd November. The reasons for this were: 1st, that according to the decision of Judge MacMahon, an inspector could not buy, and Mr. Benson was still an inspector, and 2nd, that the offer was inadequate in any case.

Thus matters stood in the case until the 6th inst., when W. G. Thurston, solicitor for the Carter estate, moved before Mr. Cartwright, the official referee, to have it declared that the offer of Mr. Benson was still binding, and that he or the inspector be called on to repay the $10,000 into court. Messrs. Crerar, Cassels, Thurston and Leigh were present, and Mr. Cass, of New York, was present to represent Oelrich & Co., the wool firm of that city. On enquiry it appeared that neither Mr. Benson nor his solicitor, Mr. Blake, was notified of this move. Messrs. Crerar, representing Mr. Long, Mr. Leigh, representing the Dominion Bank, and Mr. Cass for Oelrich & Co., appeared to support Mr. Thurston's motion.

Mr. Cassels opposed the motion and submitted a detailed statement, prepared by his client, Mr. Davidson, the liquidator, showing that the actual loss to the creditors through the mills being kept idle was $2,901 a month, counting wages, fuel, light, rent, taxes, and insurance.

The motion was adjourned for evidence and argument till Wednesday, 14th inst., at 2 p.m.

THE MYSTERY OF THE LOOM.

From "Zion's Watch-Tower"

See the mystic Weaver sitting
High in heaven—His loom below.
Up and down the treadles go.
Takes, for web, the world's dark ages,
Takes, for woof, the kings and sages
Takes the nobles and their pages,
Takes all stations and all stages.
Thrones are bobbins in his shuttle.
Armies make them scud and scuttle—
Web into the woof must flow;
Up and down the nations go!
At the Weaver's *will* they go!

Calmly see the mystic Weaver
Throw his shuttle to and fro;
Mid the noise and wild confusion,
Well the Weaver seems to know
What each motion, and commotion,
What each fusion, and confusion,
In the grand result will show!
Glorious wonder! What a weaving!
To the *dull*, beyond believing.
Such no fabled ages know.
Only faith can see the mystery,

How, along the aisles of history,
Where the feet of sages go,
Loveliest to the fairest eyes,
Grand the mystic tapet* lies!
Soft and smooth, and ever spreading,
As if made for angels' treading—
Tufted circles touching ever;
Every figure has its plaidings,
Brighter forms and softer shadings,
Each illumined—what a riddle!—
From a cross that gems the middle

'Tis a saying—some reject it—
That its light is all reflected;
That the tapet's lines are given
By a sun that shines in heaven!
'Tis believed—by all believing—
That great God, Himself, is weaving,
Bringing out the world's dark mystery,
In the light of faith and history;
And, as web and woof diminish,
Comes the grand and glorious finish,
When begin the Golden Ages,
Long foretold by seers and sages.

*Worked or figured stuff, written also tappet and tapite, hence tapestry.

THE GERMAN SURTAX.

The surtax on German goods coming into Canada went into force September 1st, 1903, and its results are now showing in statistics. During the year from September, 1903, to September, 1904, importations from Germany to Canada declined to $7,000,000, compared with $12,000,000 in the previous year.

In 1903 Canada imported from Germany 174,000,000 pounds of raw sugar, worth $2,935,716, and of refined sugar 13,286,374 pounds costing $456,528. Since the surtax went on practically no sugar has been imported from Germany, and the trade has been transferred to the West Indies. In 1902-1903 our importations of raw sugar from the British West Indies amounted to 98,000,000 pounds, of the value of $1,681,525; in 1903-1904 they amounted to 279,000,000 pounds, of the value of $3,350,745. As to refined sugar, we took 4,097,077 pounds from Great Britain in 1902-1903, an amount which last year increased to 9,445,912 pounds. There has also been a great decrease in importations from Germany of brushes, buttons, collars, combs, cotton and woolen goods, iron and steel-manufacturers, fur skins, gloves and mitts, and glass and chinaware. During the fiscal year 1903-1904 goods to the value of $683,000 begun in Germany and finished in Great Britain were imported under the surtax.

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.

Samuel Harris had his hand caught in a machine at the Simpson Knitting Works last month, and two fingers were amputated at the Emergency Hospital.

The Rosamond Woolen Co., Almonte, are putting in four new sets of English woolen cards from Platt Bros. George Reid & Co., Toronto, will supply the card clothing.

James B. Dolan and Martin Jamieson, of St. Catharines, propose establishing a knitting mill in that city. They have asked the city for a bonus of $5,000, and promise to employ at least 70 hands the first year. They will manufacture woolen underwear.

Negotiations have been started between Peter Ryan, who now has a controlling interest in the Streetsville woolen mill, and some parties who propose to take up a new line of woolen manufacturing. It is said that Fred. A. Clarry is endeavoring to get a hold in the mill again in the proposed deal.

Wm. Lott, woolen manufacturer, of Belleville, Ont., a cousin of the Lott whose name is so prominently before the public in connection with the bogus ballot boxes, has been let in for a loss of $1,000 over the celebrated case. He was a bondsman for his cousin, whose disappearance has resulted in the bail bond being forfeited.

The world's visible supply of cotton, according to figures issued this week, is estimated at 3,874,078 bales, as against 3,342,996 at this period of last year. Of this, the United States total is 3,326,078 bales, against 2,847,996 last year. The drop in raw cotton since the middle of October amounts to about $10 a bale, and one Canadian company in stocking up with new cotton will save $200,000. Most of the Canadian mills were fortunate in having good supplies on hand when the corner was effected last year, and on the whole have come out of the crisis with much less damage than the rank and file of British or United States manufacturers.

The Anchor Knitting Co., of Almonte, are putting in a new Platt mule, to increase their spinning capacity.

J. T. Wood is moving his knitting mill from Rockwood to Brussels, Ont., having purchased from the village at a reduced figure the old Howe woolen mill property there. This includes two sets of cards in the old building. We understand the price for the interest held by the municipality is $4,500.

The firm of Wright & Dallyn, dyestuff and chemical agents, Hamilton, has been dissolved, and a new partnership formed by F. E. Dallyn and S. Jardine, under the name of Dallyn, Jardine & Co., with offices at 24 Catherine St., North. The new firm will continue to represent the well-known New York dyestuff and chemical firm of A. Klipstein & Co.

The Toronto Carpet Co. has purchased the entire equipment of a large carpet manufacturing plant in Gaffney, S.C., and is removing the machinery to Toronto for installation. The plant consists of about forty looms, principally for the manufacture of Art Squares. The price paid is understood to have been about $20,000. The company is now occupying three floors of the new building erected last year, and their plant is conceded to be one of the finest for its size on the continent.

The Cassella Color Co., of New York, and 88 Youville Square, Montreal, have issued two more of the attractive series of color cards which they have been sending out to dyers for some time past. One of these gives samples of woolen cloth, the dyes of which are discharged with hyraldite W., the formula for which is given. The other folding sheet of samples shows yarn printing discharged with hyraldite. A white discharge is effectually obtained in these samples on a great variety of colors.

An interesting case began on the 24th ult., at Sandwich before Judge Meredith, that of the Imperial Bank v. Hinnegan & Burns, of Dresden. Defendants purchased the stock of flax owned by A. H. Raymond, of Essex, and were to accept delivery in six months. They gave two drafts for the goods, and Raymond discounted them at the Imperial Bank. When the time arrived to accept the flax the mill and its contents were destroyed by fire. The Imperial Bank held the insurance, and Hinnegan & Burns were unable to realize anything on their purchase. They refused to honor the draft, and the bank brought the action to recover the amount.

In his report dated Yokohama, October 27th, Alexander MacLean, Canadian commercial agent in Japan says: "In my report of September 2nd, I referred to the subject of flax, for the benefit of Canadian flax growers. I mentioned that samples, upon which Canadian flax exporters could offer quantities and quote prices, would be forwarded in the course of that month. There has been some delay, but the parcel has now gone forward to the Department a few days in advance of this writing. The company inquiring uses about sixty per cent. of the flax crop ordinarily grown in Japan, and is now looking to the foreign market mainly to make good deficiency caused by crop shortage, and incidentally to make a trial of the foreign product with the view to varying the lines of output." He gives figures of the imports of Japan for the month of September, from which it appears that Japan imported in that month the following textile items: cotton undershirts and drawers, $4,676; woolen underclothing, $10,191; mixed cotton and wool underclothing, $15,236; cotton drills, $102,669; duck, $44,415; cotton flannels, $34,248; prints, $22,223; satins and Italians, $47,775; sheetings, $123,670; gray shirtings, $157,523; white shirtings, $2[illegible],116; worsted cloths, $116,483; woolen and worsted and cotton mixtures, $75,391.

The Empire Carpet Works, formerly of St. Catharines, but now of Dundas, are still closed, pending a settlement of the legal difficulties. It will be remembered that at the sheriff's sale in Dundas, some months ago, an injunction against the sale was taken out by the assignee, Mr. Dolan. The mortgage under which the sale was called was claimed by L. Lawson, of Sykes & Finley, Glen Williams, but this claim was contested by the creditors. Previous to the sheriff's sale, an offer of $4,000 was made for the plant, and in the proceedings now taken at Osgoode Hall, it is sought to hold Mr. Lawson responsible for at least that amount in the event of a future sale. The rug department of the plant has been sold to the Dunnville Carpet Company.

The Supreme Court at Ottawa last month heard arguments in the appeal of the Canada Woolen Mills Company v. Traplin. It will be remembered that the respondent brought an action for damages in consequence of injuries received by the fall of appellant's elevator, in which he was descending to the basement. On the trial it was shown that the elevator had fallen earlier on the same day, and on examination it was found that the key of the pinion wheel driving the drum winding up the cable and the cable attached to the elevator had fallen out. It was repaired, and after the accident it was seen that it had fallen out again. The jury found that the falling out of the key was caused by vibration and the general dilapidation of the running gear, and they found a verdict for damages in favor of the plaintiff for $3,150 at common law, or $2,475 under the Employers' Liability Act. The Court of Appeal sustained the verdict and appeal was taken to the Supreme Court. Judgment has been reserved.

CANADIAN UNDERWEAR FOR GREAT BRITAIN.

In view of the fact that United States manufacturers of knit goods have recently taken large orders in Germany and Great Britain in competition with German and British goods, the following from a correspondent of the Monetary Times, writing from Manchester, will be of interest:

The Canadian Agent at Leeds is represented to have said that Canadian knitted underwear is much better, cheaper and more up-to-date than English. Also, that Canadian exporters might find a ready sale in this land for underwear, sweaters and jackets, if adequate representation were secured. One is not disposed unhesitatingly to confirm this opinion, though the Canadian article may be better than the writer is aware. If a profit is sought, the work of sellers will be hard and the way thorny. If Canadians are content to dump at prices below cost no doubt an extensive business could be done. Last year a considerable number of knitted bodices from the States were disposed of in this way. At the present, domestic manufacturers of hosiery find orders and prices alike disappointing, though a revival is hoped for in the accustomed way during next year. Canada has to reckon in the English market not with native manufactures alone, but also with the cheap goods from Chemnitz and from Switzerland. In particular are the Swiss successful in dealing with knitted mixtures of wool and silk.

When correspondents are not unanimous, it remains only for manufacturers to try, and haply one may be of service in assisting tentative experiments. Leicester is, of course, headquarters in this Kingdom for knit goods, and many of the largest manufacturers there are also large importers It is possible, therefore, for foreign firms to do business through firms like Cooper, Corah & Sons, which maintain agencies in all distributing centres. Alternatively, one might begin with London, testing such firms as Cook, Son & Co., of which several cluster together in St. Paul's Churchyard. These firms are huge wholesale department stores and they have counterparts in Manchester in houses like Ryland's, Watts' and Phillips', and in Glasgow, with houses like Arthur & Co., Limited, or Maclaren's. A first-class commission agent in any of these centres might make sure of the ground. Fancy knit goods or highly superior ones should be shown in Nottingham or at the London addresses of Nottingham dealers. Supposing these openings to be well surveyed, one could say definitely whether or not Canadian hosiery might take a place in this market.

Let it not be thought, however, that all the difficulties would end with the adoption of the goods by wholesalers. The Dominion is somewhat distant, and in modern trade of this kind the manufacturer must be able to give rapid delivery to repeat orders. Unless buyers found that goods could be had as and when required, Canadian sources would be abandoned to give place to home and Continental supplies. It is only right to add, on the authority of one who has the best means of knowing, that wholesale buyers in England have a short and haughty way of dealing with the inferior race of creatures that lives only to sell. Agents there are in thousands but only a few are in possession of wholesalers' confidence. Great commission men in the textile centres here know their value pretty accurately, and they also demand that their nominal principals shall be able to turn out large quantities in quick time. One feels it best to warn Canadians not to commence here in serious earnest unless they are prepared to cope to the fullest with all demands. Giving advice is always a matter involving some responsibility. But the thing to do—in the humble opinion of the writer—is to seek the confidence of one of the best type of agents and to test trade feeling in a way that will lead to little expense in the event of failure, and will afford some security for incurring expenditure should encouragement be found.

FABRIC ITEMS.

Miss Carlyle, one of the Ontario Factory Inspectors, reports that female help is very difficult to secure in Western Ontario, and that a number of manufacturers have spoken to her about the importation of whole families from England in order to obtain the desired help It is not a question of salary, she says, for in many places the girls make $9 and $10, this being particularly true of the clothing industry All the factories are reported extremely busy

On complaint of the Canadian Manufacturers' Association the Canadian Pacific Railway has been ordered to carry carloads of clothing to Calgary at the third-class rate The Tower Company had applied to the railway for transportation of their goods in car lots to Calgary, and it had been refused. The order instructs the company to transmit car lots of goods from Toronto to Halifax, Winnipeg, Calgary, and to other points when the above clothing company can show that they can ship their goods in carload quantities.

The Stanley Mills Company, of Hamilton, proprietors of the large dry goods and departmental store of that city, have been experimenting successfully in the plan of sharing profits with their employees. Their employees were given an opportunity to become shareholders in the business, with a view not only to assist them to develop habits of thrift, but to get the best service from those who had a personal interest in the company's business. The experiment has been a success, and the company has now opened a savings department in connection with the business, where employees may put their small savings, receiving a low rate of interest and leaving them there until such time as they total the value of one share in the company. Then the employee receives the share, upon which there is a much higher interest paid.

COTTON TRADE OF JAPAN.

An interesting report on the cotton trade of Japan has been furnished by Alexander MacLean, Canadian commercial agent at Yokohama. From this report it appears that the imports of cotton goods into Japan in 1903 were as follows:

Cotton yarns, kin*	1,061,638	$ 383,143
Cotton threads, kin	298,846	162,678
Bookbinders' cloth, sq. yds.	717,704	59,232
Cotton drills, sq. yds.	572,549	54,322
Cotton duck, sq. yds.	122,073	37,149
Cotton flannels, sq. yds.	2,353,913	268,473
Cotton prints, sq. yds.	13,091,532	987,688
Cotton satins and Italians, sq. yds.	4,854,872	570,429
Cotton velvets, sq. yds.	1,645,658	379,854
Cotton and woolen plush, sq. yds.	25,958	19,63.
Gray shirtings, sq. yds.	42,773,196	1,802,938
White shirtings, sq. yds.	6,214,903	324,246
Twilled shirtings, sq. yds.	629,145	38,648
Dyed shirtings, sq. yds.	81,589	5,339
Turkey red cambrics, sq. yds.	2,635,016	186,894
Umbrella cloths, sq. yds.	2,129,895	280,445
Victoria lawns, sq. yds.	1,835,061	58,607
All other cotton tissues, sq. yds.	2,488,201	312,843
		$5,926,560

On analyzing these figures, it seems that Great Britain at present almost monopolizes the cotton trade of Japan. In cotton yarns Great Britain furnishes $368,980 out of a total of $383,143, in thread $160,518 out of $162,518, in prints $942,903 out of $987,687, in satins and Italian cloths $567,500 out of $570,428, in grey shirtings $1,802,218 out of $1,802,938, in white shirtings $310,819 out of $324,246, and so on in most other lines, except cotton flannels, in which Germany leads with $190,219, against Great Britain's $4,030. Holland and Belgium both lead Great Britain in this item. The United States is low down on the list of countries sending cotton goods to Japan, at present.

As for the prospects of Canadian manufacturers in the market, Mr. MacLean says: Importers of these goods agree that the duties are at present against Canada to the extent of the difference between the conventional and the general tariff, and that there is therefore not much prospect of doing business with that country whilst that condition continues. As a business preliminary, however, a knowledge of the method of packing becomes necessary.

Cotton Italians come almost exclusively from Great Britain. This class of goods is usually in piece, 32 inches wide, and from 30 to 40 yards in length, wrapped in yellow paper with a flap opening. There should be 50 pieces to a case, the case being tin-lined and bound outside with band iron. Importers are emphatic about the mode of packing, which they say is necessary, they having had experience of insecure packages.

"Italians" imported here come in widths of 32 inches and 30 to 45 yards long. The goods come folded, packed and covered with yellow paper wrappers, which are so folded that the full width of the piece and the selvages can be seen without destroying the wrapper.

Umbrella cloths are imported from England exclusively. Samples should show all styles of bands and borders.

Velvets come mainly from England. The pieces are 22 inches wide by 35 yards long. Each piece is packed in a neat cardboard box, thirty of which are enclosed within a tin-lined case.

Note.—*1 kin = 1.3228 lbs. avoirdupois.

Cotton prints imported to Japan come principally from England, in piece, 30 inches wide and 24 yards long, packed in paper parcels, five pieces to a parcel, and 20 parcels to a case. There are usually 20 designs in a case.

In white shirtings, Great Britain leads with the trade in Japan. These goods come in piece: 30 inches by 40 yards long, 36 inches by 40 yards long, 36 inches by 50 yards long, and are packed five pieces to a paper parcel and ten parcels to a case.

In gray shirtings, Great Britain leads all other countries in the imports. The qualities are of three kinds, and widths and lengths, as follows: Common quality, 43½ inches by 45 yards. Medium quality, 44 inches by 46 yards. Best quality, 44½ inches by 47-48 yards. These goods are wrapped in paper, five pieces to a parcel and ten parcels to a case.

In cambrics, Turkey red, Great Britain again leads all other countries. The piece is usually 45 inches wide by 47 yards long. Each piece is wrapped in paper and 50 pieces in strong paper wrapping, covered with tar felt. A thin board is placed at the narrow sides, forming a bale, which is then covered with sackcloth and bound with band iron.

Army cloth comes in piece, 54-55 inches wide by 40-45 yards long, each piece wrapped in white cloth, 10 pieces to a case.

Drills come in widths of 27 and 29 inches, lengths of 55 and 60 yards, and are packed in paper parcels, 20 pieces to a case.

Victoria lawns come in widths of 41-42 inches, 12 yards long, packed in paper parcels of ten pieces, 200 pieces to a case.

Colored linings are in widths of 54 and 55 inches, 45 and 50 yards long, packed either 15 pieces of 50 yards or 20 pieces of 45 yards to a case.

Alpacas are in widths of 28 inches, 40 and 45 yards to a piece, packed 12 to 20 pieces to a case; and sometimes in widths of 54 inches, 6 to 10 pieces to a case.

Buntings are usually imported in widths of 18 to 18½ inches wide and 40 yards long; each piece is rolled on a stick, 50 rolls to a case. If for government orders, they must be able to stand a test of 18 kilos weight and must be absolutely fast color.

Nearly all the bookbinders' cloth imported into Japan comes from England in rolls 36 inches wide, 36 yards long, 60 rolls to a case.

Plush goods are in width 18 inches, length 35 yards, wrapped in paper, 20 pieces to a case.

All these cases must be tin-lined, and the outside well bound with band iron corners, and assured to arrive in good condition. Quoting for this market, prices must be c.i.f. and the lowest possible, so that the dealers here can see at a glance the net cost and be able to compare prices with the goods already here. Unless these requirements are strictly observed, there is difficulty in figuring from this end. In sending samples send full lines; if prices compare favorably, a market will result.

The usual time here for ordering goods is as follows: Orders for spring and summer are given during May, June and July, and goods reach here not later than February 1st, the following year. Orders for fall and winter goods must go from here during September, October, November and December, and the goods must reach here not later than August 1st of the following year. Delivery on time is very important.

Years ago the importation of cotton yarns was extensive, but it has fallen off greatly. A business that formerly ran up into millions of yen now figures only in the thousands. The reason of this is that the Japanese are supplying themselves in this line, samples of which sent to Manchester have been reported as equal to Manchester goods. The same can be said of Turkey reds, cambrics and cotton flannels.

CARBONIZING.

Although carbonization has many disadvantages, the saving it effects by doing away with boiling is so great that it has obtained a firm footing in the wool trade.

The injurious action on the fibre is due partly to the high temperature employed, partly to the carbonizing chemical. It has been found that if the carbonizing effect is insufficient it is more a question of strengthening the solution used than of increasing the temperature, but, on the other hand, it has also been discovered that for carbonizing solutions of the same strength any rise of temperature above the normal has a destructive effect on the material. The normal is about 95 deg. C. of sulphuric a· and 120 deg. of aluminum chloride. Excessive temperature is more injurious with the acid than with the chloride. The tendering of the goods increases more rapidly, however, the temperature remaining constant, with augmenting concentration of the carbonizing solution. This s especially the case with sulphuric acid. The best strength of acid to use is 3½ to 4 deg. B.

Chloride of aluminum, which is used on fabrics dyed with dyes loose to acid, is less injurious than sulphuric acid. Its action depends upon the fact that, at temperatures a little above the boiling point of water, hydrochloric acid is set free from it, and destroys the vegetable fibre. The best strength is about 8 deg. B.

One of the most essential requisites for good carbonization with the least possible injury to the fibre is that the fabric must be absolutely clean, and free from grease, soap, alkali, or acid, when it is subjected to the process. These impurities protect the vegetable matter, so that a stronger solution has to be used, to the detriment of the wool. Grease and soap, too, cause the carbonized goods to have a stiff, hard handle, and to be dull and unattractive in appearance. If aluminum chloride is used, and there is any soap or grease present, alumina soaps are formed, and it is they which are responsible for the stiffness which, as is well known, happens so often in carbonizing with the chloride. Alkali does the least harm; in fact, its injurious action, if the solution is strengthened by the right amount to compensate for its presence, is confined to wasting the carbonizing agent.

It is of great importance to distribute the carbonizing liquid uniformly over the fabric. The solution must be thoroughly stirred before use, and the goods are entered wet, and, after being well worked in the liquid, are centrifuged. If the piece is wound out of the vat on to a winch, the winch should be turned first one way and then another several times to prevent solution from accumulating in particular parts of the fabric. The use of the winch is not advisable. The piece should pass at once through wringing rollers on leaving the vat, and then to the centrifugal. It is of great importance not to leave the goods lying wet with the carbonizing liquid, especially in the case of sulphuric acid, even after centrifuging. They should go direct to the drying-room. Besides the accumulation of carbonizing liquid in the lower parts of a heap, exposure to light is injurious to soured goods, and also makes unlevel dyeing, as the parts exposed to the light will dye darker than those which have not been so exposed.

Although we still see, here and there, the old-fashioned carbonization chambers, in which the goods are hung up loose after having been dried, carbonizing machines after the two-chamber system (a drying and a heating-room) are now used almost universally. Whatever system is adopted, the goods must be thoroughly dried before carbonization proper in the hot room. Steam prevents proper charring of the vegetable matter, and must, therefore, not be developed in the hot room.

It is of great importance to note that it is much better to carry out the carbonization proper by means of a long exposure to a moderate heat than by shorter exposure to a higher temperature, as then the wool is much less affected; 90 to 120 minutes at 80 to 85 deg. C. are better than 45 to 60 minutes at 90 to 95 deg., and 24 to 30 hours at ordinary temperatures (say 16 to 18 deg. C.) will enable the vegetable particles to be rubbed out.

With regard to the question whether it is better to carbonize before or after milling, opinions are divided. The most important argument adduced in favor of milling first, is that if by chance or carelessness any acid or aluminum has been left in the goods, unpleasant complications may ensue on milling. It is also asserted that carbonization makes the material mill less easily. The supporters of the other view say that previous milling makes the stuff so close that carbonization is very difficult, and requires severe treatment, whereby the wool is injured, and that the carbonization partly undoes the effect of the milling. The balance of advisability certainly seems on the side of carbonizing first, and taking care to free the goods perfectly from alumina, etc., before milling them.

Of late, chloride of magnesium has been proposed as a substitute for chloride of aluminum. Whether the substitution is advantageous is doubtful, as the magnesium salt requires a temperature higher by 5 to 10 deg. C. than the aluminum salt to set free the hydrochloric acid. Residual magnesium, too, is as injurious to the after-processes as alumina. The case is different with another proposed substitution, viz., that of acid sulphate of soda for sulphuric acid. A stronger solution is required (5 deg. to 6 deg. B.), but the action is nearly as strong as that of the acid, and the effect on the wool is practically nil. The carbonization after drying requires a temperature of 100 deg. C. for forty-five minutes.

To neutralize carbonized goods, 4 to 5 per cent. solution of calcined soda is used. Stronger solutions hurt the material more than the carbonization itself. The neutralizing bath should be weaker for chloride of aluminum or magnesium, as most of the acid developed volatilizes during the carbonization. When the acid sodium sulphate (bisulphate) is used, the neutralizing bath should not be stronger than 2½ deg. to 3 deg. B.—Deutsche Wollen-Gewerbe.

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HALF-SILK DYEING.

Like half-wool, half-silk may be dyed by the one-bath or the two-bath process. In fact, the treatment of the two sorts of fabrics only differs in so far as properties of the fibre interwoven with the cotton are different in the two cases. In dyeing half-silk very little Glauber's salt must be used, and none at all for light shades, as the salt injures the lustre of the silk. The half-silk bath must be more alkaline than is required for half-wool, and the reaction is secured by adding soap and carbonate or phosphate of soda. Soap is of great assistance in preserving the lustre of the silk

In the one-bath process the half-silk is entered into the lukewarm dyebath, which is then gradually brought to 80 to 90 deg. C., at which temperature it is kept for about an hour. For light shades, the bath contains 2 to 3 grammes soap, 0.1 to 0.2 grammes soda, or 0.8 to 1.2 grammes of soap, and the same weight of phosphate of soda, per litre For dark shades, 4 to 5 grammes common salt are also added

The cotton is allowed to dye in the cooling bath, and if the silk is to be the darker, the bath must be less alkaline

If, as happens with many dyes, the silk does not get sufficiently dyed, it must be topped with acid or basic dyes in a fresh bath with from 3 to 6 per cent. acetic acid, cold for basic dyes, at 30 to 50 deg. C. for acid dyes. For getting two-color effects (changeants), both wool and silk can be dyed together in some cases. For example, either Alkali Blue or Direct Yellow is dyed in one bath, followed by a rinsing and souring. The more usual practice, however, is to use dyes which leave the silk white, and then to dye the silk in a fresh bath with an acid dye of a color contrasting with the cotton. Another method is to first dye the silk with dyes which leave cotton white, and then to dye the cotton with a basic dye on a tannin-antimony mordant. To load the silk, the fabric is often put through a stannic-chloride bath of 14 deg. B. between mordanting and dyeing.

Gloria—i.e., fabrics consisting of silk and wool—can be dyed in a single bath with acid dyes, and sometimes, but rarely, with basic dyes. Many dyes differ greatly in their affinity for the two fibres. For example, most acid dyes at the boil dye the wool only, and go best on the silk at 50 to 60 deg. C. Dyes which dye both wool and silk uniformly at the boil are, of course, excluded. We can use only such dyes as Methyl Violet and Victoria Blue, which have more affinity for silk than wool, or as Ponceau and Acid Fuchsine, which have more for wool than silk, or Citronine, which dyes only the wool at the boil. With dyes which dye the wool more than the silk, what dye has gone on to the latter can be removed with a weak soap bath, whereupon we can proceed to dye the silk as desired. Substantive dyes are much used for gloria. Yellow dyes, such as Chrysophenine, dye the silk very deeply in an acid bath, and the wool hardly at all, so that they must be used with Glauber's salt and a weak alkali. Various effects can be produced. For example, if we dye the wool with Acid Fuchsine and 5 per cent. of tartar-preparation at the boil, rinse, strip the silk at 60 to 70 deg. C. with a soap bath of 3 grammes and 1 litre, we can then dye the silk in a fresh neutral or slightly alkaline and cold or lukewarm bath with Acid Green, rinse, brighten with acetic acid, and dry.—By J Nonnenmuhlen, in the Berlin Farber Zeitung.

THE SETTING OF THE LOOM.

In some of the larger mills it is the custom to build their looms on the premises, the various parts being cast from the firm's patterns, and in some cases cast in the foundry connected with the mill. In most cases, however, the new loom comes direct from the foundry of some large machinist, practically complete, so that nothing is required but the fixing of the loom in its place, the setting of its varied parts so as to work in harmony with each other, and the supply of the fittings necessary, such as tappet, dobby, or jacquard with the warp, etc. In most instances looms are placed on the ground floor, the upper rooms being used for other purposes, such as winding, warping, slashing, warehousing, offices, etc. The reason for this arrangement is that the ground floor enables the looms to be fixed more rigidly, and so produce less vibration than is possible when the looms are placed in the story, and also because the ground permits of the various damping methods better than a boarded floor. There are many mills, however, in which, owing to considerations of ground rent or power, looms are placed in upper rooms, but a shed on the ground, arranged with sky windows, is the best plan for effective working.

Looms should be fixed as firmly as possible to the floor, the working of the loom causing so much vibration that unless it is very securely fixed the loom will commence to travel about, or at least to rock or jump up. When a loom is fixed firmly, the picking is strong and even, the shedding is regular, and the cloth is level and free from cracks. When the loom is placed on stone flags or concrete, the loom is secured by means of holes drilled under the feet, these holes being plugged with wood and then a stout nail being driven through the hole in each foot into the wooden plug. In some sheds a bolt with a wedge-shaped head is set in molten lead under each foot, the bolt passing through the hole in the foot and secured by a nut.

When the loom is being properly fixed, the gaiter or overlooker, or mechanic, tries the frame of the loom with the spirit level from front to back and from end to end. The shafts, breast beam, back rest, etc., should all be true, for though a loom can be made to run without being set level, attention to this matter will soon more than repay the cost of a spirit level. The journals, stops, and bushes must all be true, and without unnecessary binding. Of course, to some these hints may appear trifling or unnecessary, but the writer has known instances when, owing to their neglect, much extra work has been caused. When the loom is set up and all the necessary leather work has been put to, the loom should be allowed to run a few hours before the warp has been put in. A reed should be put in, and the shuttle should be working all right.

The shuttles of the ordinary over-pick loom are bevelled on the back; those of the under-pick loom are bevelled on the front. Care should be taken that all the shuttles of the loom are of the same width, and that their tips exactly coincide with each other; that is, meet the picker at the same point. Really, a picker should not need gauging, but this is generally done, as it is not every loom and shuttle that is so perfect as to enable the shuttle to run straight without the picker being gauged. To ensure the shuttle running straight, the sley should be set level, the reed should not over-face the box back, nor be too far behind the box back. The reed should bend backwards in the middle, and the race-board should be lower in the middle than at the ends.

In an under-pick loom the picking stick must work freely in the middle of the slot, without binding against either side, whilst in over-pick looms the spindles should be slightly higher, and nearer the front at the mouths of the boxes than at the ends. The timing of the pick should be so that the shuttle is commencing to move when the cranks are a little in front of the bottom centre, and in over-picks the picking should be so set that the picker is under control of the tappet till it gets about two inches from the buffer. If the pick is too strong the shuttle may rebound, and at the next pick may either fly out or not reach across, but the proper regulation of the strength of pick and the means for preventing the rebound can only be learned by practice and experience.—F. W. H., in Textile Excelsior.

THE SILK INDUSTRY IN FRANCE.

Generally speaking, the depression in the Lyons silk trade is perhaps less deeply rooted than is supposed. The far-reaching modifications that have taken place, the extension of luxury throughout all classes of society, the improvement in the universal well-being have all contributed to change the quality and kinds of silk produced.

The vaunted monopoly, however, that Lyons once claimed through the skill and cleverness of her weavers has disappeared, Mr. Consul Liddell avers, before the growth of foreign competition. Fortunately, however, the economic evolution has caused an increase in production. Whereas in the whole world at the end of the eighteenth century

£4,000,000 represented the value of the silk sold, the value has now risen to £80,000,000. This development has compelled the French producers to redouble their efforts, as France itself produces one-thirtieth part of the total production of cocoons.

Still France can not be said to have lagged behind, as on an approximate production of £80,000,000 Lyons and St. Etienne claim £21,600,000, and their united export amounts to £12,320,000.

The deficit in the cocoon harvest of 1903 amounted to 2,864,532 pounds, or 17 per cent. decrease. This deficit was due, amongst other causes, to the bad weather during the spring, the lateness of the cultures, and the smaller number of eggs put out for incubation. In 1903 there were 120,266 silkworm raisers bringing up 182,712 ounces of eggs, whereas in 1902 the number of raisers was 128,199, and 198,427 ounces of eggs. Nearly all the departments producing silkworms show a decrease in the production, which has been gradually declining during the last ten years.

The cause of this decline in the culture of silkworms is of long standing. It is firstly organic; that is to say, the worms were attacked by disease, which it was found most difficult to cope with. Pasteur did, however, find an antidote to this disease, and it was applied with a large measure of success in the Cevennes. Silkworm culture seemed after all likely to succeed, when in 1892 cocoons began to arrive from China and Japan which were offered at such extraordinarily low prices that the French cocoons were quite unable to compete. It has now been decided to organize co-operative spinning mills to which silkworm raisers are to deliver their stocks at a minimum rate paid cash down at the time of the harvest, and that the silkworm raisers are then to participate in the profits that are realized in proportion to the number of cocoons furnished by them.—Commercial Intelligence, London.

THE ANGORA IN QUEENSLAND

In view of the contemplated extension of Angora goat raising in the Canadian North-West, the following from one of the Government reports of Queensland, Australia, will be of interest:

In accordance with the intention expressed in the last report, circulars and forms were posted to all breeders of Angora goats, whose addresses could be ascertained. Although some of them have not vouched any reply, the tenor of those received points to a probable expansion of the industry, and the following remarks are collated from the replies: Several owners, who started with crossbred sires express the desire of obtaining purebred ones and seek information as to where they are obtainable. Climatic variation seems the principal cause of success or failure. The Northern coastal districts, owing to excess of moisture, seem ill adapted to their success. In the dry climate of Hughenden, on the other hand, they thrive well, and as a food product are stated to be excellent, and equal to the finest lamb. More attention has apparently up to the present been given to breeding for meat and milk than for mohair. For the latter purpose, grading up from the common or crossbred doe, with a purebred buck, results in a good commercial product, after the second or third cross, that is, three-quarters or seven-eighths purebred. As the breed becomes purer, the fecundity and milk yield decrease. As clearers of scrub land they are specially valuable. One breeder says: "I note they eat nearly all the bushes, even sprouts of eucalyptus and coolibah; when we first came here there was scrub of sandal-wood adjacent; there is no scrub now, and the goats cleaned it." If yarded at night herding is not necessary unless wild dogs are numerous. In this case protection may be afforded by rearing a dog of suitable breed in the goat yard, suckled from the birth on goats. It would accompany the goats all day, and return with them at night, and defend them if attacked. The skins are a valuable asset, as prices realized range from 1s. 6d: to 5s. 6d. each. Although little attention has hitherto been given to the production of mohair, several owners express the intention of shearing this year. The only reply received on this point states that 6½d. per lb. was obtained in Sydney, and this was from purebred goats; the wethers sold for killing averaged 40 lb. each and this at barely two years old.

The Government of the colony are determined to encourage this industry, and the Agent-General is now making enquiries as to the London values for mohair.

THE PRESENT POSITION OF INDIGO.

A correspondent writes to "The Times": The struggle between the natural and the artificial indigoes continues to be waged in the dye market and in the trade journals. Chemists, dyers, and planters disagree with one another, and the practical dyer scouts the conclusions of the analyst. The manufacturers of "indigo pure" boast the superiority of their product, and cheerfully anticipate the extinction of indigo cultivation. On the other hand, it is contended that the very impurity of vegetable indigo gives it superiority as a dye, and that the natural indigo "feeds" the cloth instead of deteriorating it, as artificial indigo is said to do.

It seems, however, to be generally admitted that the two indigoes are identical in composition and have the same chemical reactions A great advantage claimed for the synthetic indigo is stability of price and quality, and even if it is not so "fast" as natural indigo—a point in dispute—it is nevertheless stated to be sufficiently durable for many articles. The planter urges not only that the vegetable dye is more durable, but that it contains an impurity, "indigo red," which, if present only to a small extent and not to excess, renders the indigo more valuable for dyeing purposes than pure indigotin. Hence the buyers of natural indigo obtain a kind of surplus value, "indigo red," besides the indigotin. In other words, the best indigo from the chemical analyst's standpoint is not the best in the vatting process. Needless to add, there are others who affirm that the presence of "indigo red" is always injurious, and who allege that the peculiar virtue ascribed to it in coloring is really due to the indigotin. There are yet others who take a middle course and declare that the highest brilliance and durability are produced by a mixture of natural and synthetic indigoes.

The vegetable dye has had to face its formidable antagonist under very adverse circumstances. The competition first became serious about seven years ago, during which period the weather conditions, always uncertain, have been exceptionally unfavorable to indigo cultivation in India, so that the out-turn has been small and the quality poor. In days gone by a lessened production brought an enhancement in price, and planters' profits did not suffer severely. But the advent of synthetic indigo has set an effective limit to any rise in price, and a shrunken yield means attenuated profits. As a consequence, cultivation has been restricted and valuable properties have greatly depreciated. The area under indigo has decreased from 1,688,042 acres in 1894-95 to 574,654 acres in 1902-03, while the out-turn has fallen from 237,491 cwt. to 73,908 cwt. The annual exports, which averaged 148,000 cwt. during the five years ended 1899-1900, sank to 60,410 cwt. in 1903-04, while the average price of the indigo shipped from Calcutta dwindled from 203 rupees per maund of 82-lb. in 1899-1900 to 148 rupees in 1903-04. While the production of the natural indigo has been hampered by a cycle of incredibly bad seasons, by poor quality, and

by diminished prices, the sale of synthetic indigo has increased five-fold in seven years. Although, however, the outlook is discouraging, there are some planters who recognize that there is still a wide demand for natural indigo, and who believe that reforms in business methods and the application of science to the industry will enable a good fight to be made against the coal-tar dyes. Indigo that sold last season at 110 rupees per maund yielded a profit, and there is said to be still a margin for considerable reduction in price without eliminating profit.

With regard to the business side, there appears to be a need for combination among the planters—for co-operation in controlling the market and in pushing sales. Again, the financing of the industry requires reform, and economies may be effected in management as well as in the marketing of the produce. As regards improvements in cultivation and manufacture, experiments have been in progress in Behar for several years under the superintendence of skilled chemists. The Bengal Government has already aided these experiments, and is allotting 50,000 rupees for the current year, and a like sum for 1905-06. Greater care in tillage and in selection of seeds, proper rotation of crops, and improvements in fermentation are among the recommendations made for increasing the quantity of leaf and for the production of a higher percentage of indigotin. New varieties of plants have been propagated, and Natal indigo, acclimatized in Java, has been especially successful, yielding 50 per cent. more leaf, of excellent quality, than the common variety. It can be grown as a perennial, and it resist cold, drought, and inundation. Last season the Indian crop was fair, at least as compared with that of the previous disastrous season, but the restricted demands by calico printers, due to the abnormal price of raw cotton, kept indigo prices low.

The exports of Indian indigo, as already remarked, fell to 60,410 cwt. in 1903-04. The chief customers in that year were Egypt and the United Kingdom—both of them large re-exporters—the United States, Japan, Austria-Hungary, Turkey in Asia, and Persia. During the first four months of 1904-05, the trade has improved, increased purchases having been made chiefly by the countries just named, excepting Japan, whose takings fell from 2,605 cwt. to 11 cwt. This was no doubt due mainly to the unfavorable tariff treatment of Indian indigo in Japan, as compared with that accorded to the Java (natural) indigo and the synthetic indigo. The competition of artificial indigo in Eastern markets (including India itself), is a serious problem for the planters.

The last question, and the most important, is that of price. Since artificial indigo became a menacing competitor prices have fallen from 17d. to 8d. per lb. of 20 per cent. indigotin. The increased scale of the synthetic indigo prevents the natural indigo from rising even when the supply of the latter is small, while the persistence of natural indigo forces the makers of the synthetic to keep their prices low. There seems but little probability that the price of synthetic will be raised—though some contend that it is being produced at a loss—and the price may even, as the result of improved processes, be reduced still further. Is it possible for the planters to effect such reforms in business methods and such economies in production that they can meet any further reduction in price? This is the fundamental point on which the issue of the struggle turns, and on which the fate of natural indigo depends.

USE OF THE STROBOSCOPE.

It is a peculiarity of vision that impressions on the retina do not fade instantly but persist for a fraction of a second after a change has taken place in the aspect of the object viewed. This persistence of vision is what enables a fairly good view of a fair ground or baseball field alongside of a railroad track to be seen from the window of a rapidly-moving train, when, if the train were standing still, all that could be seen would be a high fence with narrow cracks between the vertical boards. When the car carries one by the fence rapidly the eye receives a series of views of the field through the cracks, which blend together and give the panorama effect. This peculiarity is taken advantage of in investigating the action of certain vibrating or revolving mechanisms like engine flywheel governors, etc. If a rapidly-running flywheel governor is seen for a fraction of a second at one spot at every rotation, it appears to the eye to stand in space and under that condition the in-and-out movements caused by changing load, may be readily seen. One method of obtaining this effect is to mount a radially-slotted disk on the flywheel shaft so that the slot covers the portion of the governor to be watched. In front of this disk is another slotted disk which stands stationary. Now if a strong light illuminates the object a flash of reflected light will reach the eye at every revolution. The same stroboscope effect was obtained in another way in the elaborate investigations of the Pelton water wheel which were carried on some months ago. To perfect the shape of these buckets so that they should have the maximum of efficiency and durability it seemed necessary to observe the action of the jet as it impinged on the buckets, but to get a perfect visual impression the buckets should stand still, which, of course, was impossible in running tests. An arc lamp was arranged with a shutter, which was worked in synchronism with the revolving water wheel. At every revolution a flash of light was directed upon the jet and buckets, giving them the impression of standing still while the water entered the buckets and flowed out at the sides. With the same apparatus instantaneous photographs of the jet and buckets were taken.—Machinery.

ELECTRICITY IN TEXTILE MILLS.

(Continued from last issue.)

A further feature, which is of considerable importance in some classes of work, perhaps not pertinent to cotton mills, is that from half load to 125 per cent. load the steam consumption is almost a straight line.

In a recent test made on a 600-h.p. Westinghouse-Parsons unit by a well known firm of engineers some interesting performances were shown, and as it is fairly representative of the operation of the steam turbine, we have made some extracts from this test.

When operating with 26.9 inches of vacuum and with dry saturated steam at 150 pounds' pressure, a water rate of 14 pounds per brake horse-power was observed. By increasing the vacuum to 28 inches the water rate was decreased to 13.63 pounds per brake horse-power, which was further lowered to 11.17 pounds per brake horse-power by the use of 180 degrees Fahrenheit super-heat. It will be seen that the gain due to 1.1 inches vacuum at full load was 2.4 per cent. and the gain attributable to 180 degrees Fahrenheit super-heat, 10.5 per cent.

The thermal efficiency obtained in this test for dry saturated steam was 17.22 per cent. and under the same conditions with super-heated steam, 19.43 per cent.

In another test, under regular operating conditions on a 1,500 kilowatt turbo-generator, the steam consumption was found to be 14.23 pounds per electrical horse-power, and the corresponding coal consumption (with Georges Creek "Run of Mine" coal) 1.23 pounds per electrical horse-power, using steam at 155 pounds' pressure, 42 degrees Fahrenheit super-heat and 27 inches vacuum.

Still another test, on a similar turbine, but with 28 inches

vacuum and 140 degrees Fahrenheit super-heat, developed a water rate of 12.66 pounds per electrical horse-power, which is equivalent to 10.75 lbs., per indicated horse-power on the basis of a total efficiency of 85 per cent. for the generator and steam engine.

It is a well known fact that steam engine economy is dependent upon the excellent condition of the engine, and to maintain this condition it is necessary to take frequent indicator cards and to make adjustments of valves, piston heads, etc.

The economy of the steam turbine does not seem to be affected by years of use. Observation has shown that there is practically no wear on the bearings whatsoever, seeming to show that the friction load in the turbine is very small.

A well known engineer and operator has characterized the steam turbine as "fool proof" and we believe that experience shows that undoubtedly it is the simplest form of prime mover extant, and therefore should be of interest as a means of power generation where it is desirable to lessen the cost of power and attendance.

Owing to the small size of the steam turbo-generators, the cost of building and the space occupied thereby is materially lessened as compared with other forms of engines and generators, and it is interesting to note that a great many manufacturers have installed turbo-generator auxiliaries in connection with their main steam engines in a space which, while sufficient for the turbine outfit, was inadequate for a new engine.

We believe that the turbo-generator offers opportunities to many operators of cotton mills to increase their power facilities without increasing their engine room space. In some manufacturing establishments, it has been found desirable from the point of economy to retain a portion of the present direct steam engine drive and install additional power by means of electricity, operating distant or outlying loads by electric motors. This provides means for shortening long lines of shafting, eliminating angle or other difficult mechanical drives, thereby decreasing friction losses and materially increasing the plant economy.

We now come to the distribution of power to the different departments in the mill, and it is to be noted that the transmission system consists of small copper wires of suitable diameter to carry the necessary power. These wires when once installed are permanent, require no maintenance, and do not require special provision for supports. It is obvious that this method of transmitting power is one of great flexibility, and the use of electric motors permits the exact amount of power necessary to be applied at the very point where required.

The alternating current motor has the widest use in textile mills for the reason that its design is so simple, in fact, consisting of only three main parts; the stationary portion, the revolving element and the bearings. There are no moving electrical contracts and as a consequence the only attention required is to keep the motor clean and to properly fill the self-oiling bearings.

One of the characteristic features of an alternating current motor is its automatic regulation, requiring power only in proportion to its output, and being capable of sustaining, should occasion demand, large overloads without injury. Owing to the inherent design of this type of motor the uniform rotative speed of the prime mover is available at the work just as though it were directly geared, and thus a gain in production resulting from a steady and even speed.

The question of sub-division of line shafts is one that is best disposed of by taking up each individual case and selecting motors of such capacity that a minimum amount of belting and auxiliary shafting will be required, at the same time reducing the friction to as low a factor as is consistent with a proper financial outlay.

Where the electric system is used, a factor of value in some instances is that if a break-down should occur, only a small portion of the mill would be affected, and such sections as it may be desired to run independently can be so operated without respect to any other and without operating main drives as is found necessary with a mechanical system.

On account of the general improvement in textile machinery many mills have found that an increased production could be obtained by running their machines at a higher speed, involving an increase in the speed of the line shafts. While this can be accomplished successfully by changing pulleys, the increased speed means an increased demand upon the engine and oftentimes, due to the lack of capacity, this condition could not be complied with on account of the increased cost all along the line; whereas, if electric motors were used for driving the shafting, it would be a small matter to change the size of the motor, and if the increase in speed is general, it may involve an increase in the power house which can be accomplished by the addition of a new generator unit much more readily than by changing the engine in a mechanical drive.

In a small mill, where it is known with a fair degree of accuracy, that the conditions will not change and where the character of the product is such that no change in speed will take place, a mechanically driven mill with a centrally located steam engine will undoubtedly be as economical, and its initial cost less than an electric installation.

With the improvements in textile machinery, the higher speeds and the changing market, there are but few men who believe that such a mill is representative of the industry.

In other instances mills are laid out with a view to extensions, and on account of the inflexible conditions existing in engine driven mills, a large engine has been installed operating at from 50 to 60 per cent. of its rated capacity, which sometimes means that a single cylinder of a cross-compound engine is installed and that during the early operation of the mill the power plant must be running at an uneconomical load, which of course greatly increases the cost per horse-power per year. The main shaft and transmission details must be of such a capacity that they will transmit the whole power should occasion demand it in the future. This involves a large initial outlay upon which interest, depreciation and insurance are increasing the operating cost per horse-power.

There are other mills consisting of a number of buildings, each having its own power plant and inflexibly connected to its own lines of shafting, and therefore unable to supply power to any other building or to help out in the event of other engines being under-loaded, over-loaded, or disabled; thus some of the power plants are running at uneconomical loads together with increased attendance, repairs and maintenance, also greater space required by the several plants that might be profitably used for manufacturing purposes if a single power plant were possible as with the electric drive.

A matter which may prove of some interest to the Association is that, recently, there has been placed upon the market a variable speed alternating current motor suitable for the operation of cloth printing machines, tentering machines, and drying cans. The speed control is accomplished in the motor and is much simpler than previous methods of electrically operating the above class of machines; particularly is this true of printing machines.

It is a well recognized fact that good lighting is an essential consideration in the manufacture of textile materials and goods in general. This is particularly true of the weaving shed, where special attention is always given to proper lighting effects and where frequently saw-tooth construction is used. You are all doubtless familiar with the arc lamp and incandescent lamp; it will, therefore, not be necessary for us to discuss this form

of illumination. We are, however, pleased to call your attention to a comparatively recent development in the art of electric illumination and in this respect we refer to the Nernst lamp.

This form of light is well adapted to the lighting of cotton mills on account of its pure, white light, which resembled daylight, its steadiness and cleanliness. The lamp was primarily designed for operation on alternating current, and it is especially adapted to the varying conditions which exist in textile manufacture, on account of its flexibility in candle power, the range of units being from 25 to 500 candle power. This flexibility permits of the proper choosing of units so that a uniform quantity of light may be had throughout the mill.

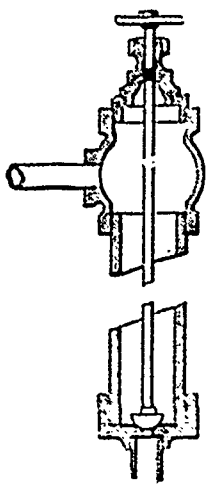
The efficiency of the Nernst lamp is about double that of the incandescent lamp, and is approximately on a par with the arc lamp, and since it is designed for operation on 200 to 220 volt circuits, the cost of electrical conductors is considerably less than for incandescent or arc lighting.

* * *

A HOME-MADE STEAM TRAP.

At the recent meeting of the New England Cotton Manufacturers' Association, Thomas H. Smith described, as follows, a home-made steam trap which he had invented:

"It consists of three feet of two-inch pipe with a cap on the top. That stem is attached to a brass rod 5-16-in. in dithe top. That stem is attached to a brass rod 5-16-in inch diameter. On the bottom of the rod is a little hemispherical piece of packing, which is sufficiently hard to resist the action of steam. If you get anything softer than this, the steam will melt away. The ratio of expansion of brass and iron is practically as three is to two; that is, you will have three points of expansion in brass to two in iron. Steam at 50 pounds' pressure contains 297 degrees of temperature. Taking 200 degrees as the difference between the inlet steam and the outlet water, a 30-inch trap gives nearly 1-32 inch in expansion, which is sufficient to drain the trap. I have noticed that this trap has one advantage—the trap is open when it is empty. That should be the case with all traps, so that when the steam is turned on the water will drain out of the pipes, and the pipes can also drain themselves after the steam is turned off. Turn the steam on, and the water will come out of the half-inch pipe and fill the pipe at a low pressure. As soon as the steam begins to come, the rod will close the valve entirely. After that it will open itself slightly and allow the water to trickle out in a hot stream. With this little valve arrangement at the top, you can set it so that more or less steam may pass."



Home-made Steam Trap

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DISCHARGE DYEING ON HALF-WOOL.

Unions may be as easily discharged with hyraldite as materials consisting of pure cotton or wool, and a new field of decoration is thereby opened out for those fabrics. Many dyestuffs are applicable for this work, but very good results are obtained with the Diaminogene, Diamine, Lanacyl, and Naphthol colors (Cassella). Dyeing is carried out with the addition of Glauber's salt, and by means of the one-bath method, which is generally adopted for unions. The quantity of Glauber's salt varies according to the depth of shade, 1 to 2 lb. of crystallized per 10 gallons of water being added to the bath which contains the dyestuff. The goods are entered into the bath at hot to boiling-hot temperature, and dyed for half an hour below boiling point. Boiling is then commenced and continued until the wool is dyed to the same shade as the cotton. For shading, dyeing is continued either just below boiling point or at the boil, the temperature determining whether the wool or the cotton shall absorb the most dyestuff. After dyeing the goods are well rinsed, and before drying can with advantage have the rinsing repeated in water adulterated with acetic acid. The discharges are obtained in the following manner:

White.—400 parts by weight of Hyraldite W are stirred to a paste with 600 parts by weight of gum arabic 1 : 1, then heated for twenty minutes to about 160 deg. F., stirred until cold, and passed through a fine sieve. As a thickening agent, either a neutral starch tragacanth thickening or British gum thickening may be used instead of gum arabic. The printed and lightly dried goods are steamed for ten to twenty minutes at slight pressure (⅛ to ¼ atmosphere), then weakly acidulated with hydrochloric acid, and very thoroughly rinsed.

Pink.—

50 parts by weight of Rosazeine 6 G,
50 parts by weight of glycerine,
10 parts by weight of wheat starch, and
290 parts by weight of gum arabic 1 : 1 are boiled for half an hour and stirred until cold, then the cold solution of
50 parts by weight of tannin in
50 parts by weight of klycerine, is added.

This substance is passed through a very fine sieve, or, better still, ground in a ball mill or any other kind of wet grinding mill. To this colored mixture are added, with careful stirring, 250 parts by weight of Hyraldite A dissolved in 250 parts by weight of water and cooled.

Green.—20 parts by weight of Thioflavine T, 10 parts by weight of New Methylene Blue N S S; otherwise the same as for pink.

Blue.—30 parts by weight of New Methylene Blue N S S; otherwise the same as for pink.

Yellow.—50 parts by weight of Thioflavine T; otherwise the same as for pink.

The pieces printed with the colored discharge are steamed as stated above, if necessary plated down several times in order to better develop the colors, and then thoroughly rinsed.—Textile Manufacturer.

* * *

—A. J. Smith, who has been carrying on business at Lethbridge in men's furnishings, clothing, and boots and shoes, accidentally shot and killed himself last month.

—Chicago now has a system of underground transportation of merchandise carried on by the Illinois Tunnel Company in subways under the streets of the downtown section of the city. Merchants are delighted with being able to receive and ship goods without having the store entrances blocked by huge piles of freight and teams standing close to the walks, obstructing the passage of customers and the places needed by the carriages of patrons. All the inconvenience and interference is obviated by the new method of receiving and sending out packages and boxes without being seen or stumbled over by shoppers. Forty or more feet underground, below the surface of the street, small but powerful motors are whirling along trains of steel cars which bear tons of merchandise to and from scores of stores. Among the advantages of this method of handling merchandise are cleanliness, absence of noise, and relief from congestion of the thoroughfares.

DEVELOPMENTS IN PIECE-DYEING MACHINES.

In the old times, when there was not much work to be done, the plant used in the dyeing of piece goods was of a very primitive character. It was adapted to deal with one or two pieces at a time, and then only treating these in an imperfect manner. A round iron or copper boiler placed over a fire was chiefly used. The amount of labor involved in handling the pieces would be fairly considerable, and if the dyer was not energetic, and lifted the goods in and out and opened them well, there would be a great risk of the pieces coming up uneven in shade, some parts being darker than others. As time went on, the ideas and demands of customers as regards levelness of shade became more fully developed and urgent, and, further, as the quantity of work to be done grew larger, such primitive appliances became unsuitable. Consequently developments in the construction of piece-dyeing machines were urgently demanded, and in the last twenty years apparatus has been produced turning out finer and better work with less labor and greater production.

Such developments have not taken place all at once, but little by little, as ideas developed. One man would make a little addition here, another there, as they thought might be improvements on the plant they were using. Such changes seem to have run along three lines, first in the addition of wince or driving rollers for drawing the pieces through the dye liquor; in the ordinary wince dye machine the driving roller is placed above the machine, while in what are called hawking machines the drawing apparatus consists of a pair of rollers placed below the surface of the dye liquor. Another improvement is in the addition above the dyebath of two rollers or winding beams, and two or more guide rollers below the liquor. The ends of the cloth are fastened to the winding beams and drawn by these alternately from one to the other, through the dye liquor. Developments in this direction led to what are called dye jiggers.

Another improvement more particularly used in indigo dyeing and in cotton and linen piece goods dyeing and in the dyeing of warps is in the direction of producing what are known as continuous dyeing machines, consisting of one or more tanks containing the various liquors fitted with a number of guide rollers, and the goods pass up and down through the tanks and so through the dye liquors.

Such are the three main lines on which the development of piece-dyeing machines has taken place. It is, perhaps, scarcely possible to name each step in process, for that has been done little by little and often in a very modest and unassuming manner.

The ordinary wince dye-vat or machine consists of a tank, usually of wood, although both iron and copper ones are made. Generally one side is made straight, while the other, the one on which the cloth falls from the wince, is curved in some patterns and inclined in others; in most there is a small guide roller at the bottom under which the cloth passes. The dye-vat is usually fitted with a false lattice-work bottom and with a steam coil for heating up the dye liquor. Above the dye-vat is a skeleton wheel or wince, and round this the cloth passes. The pieces of cloth are stitched end to end to form an endless piece. The size of these machines may vary from one capable of taking one piece full width, to others taking three to four pieces full width. In many cases, however, the pieces are not sent through the machine at one time. In such cases guide rails with pegs are provided to keep the pieces separate from one another. Some machines are all driven in one direction, while in others there are means for changing the direction of rotation.

In some wince dyeing machines the pieces are not made endless. In these cases a large tank divided into compartments is fixed below the wince. The pieces are placed entire in a set on one side of the machine, the ends thrown over the wince, and this draws the pieces out and delivers them into another set of compartments on the other side of the machine. The entire length is thus drawn over, the direction of the wince is changed, and the pieces drawn back again to the first set of boxes. With either kind of wince machines the operation is carried on as long as is thought necessary to produce the desired shade. Of these two types of wince dyeing machines, that in which the cloth is made endless is the easiest to work, and will give the best results, particularly on thick cloths. Many makers turn out such machines differing from one another only in small minor details. Often some dyers with a mechanical turn of mind fit up their own wince machines to suit the special kind of work they have to do.

The so-called hawking machines have been devised more especially to dye cloths in indigo, where one necessity is to keep the cloth under the surface of the dye liquor. One of the best known of these machines is Woodcock's hawking machine. The working part consists of a series of four rollers—two large central rollers driven by gearing, whose purpose is to draw the cloth through them and through the dye liquor; against these revolve two smaller rollers which act the part of guide and doffing rollers to guide the piece between the central driving rollers, and to ensure that the cloth leaves these rollers and does not wind round them. This occasionally happens and is the cause of the cloth being damaged. Attached to the rollers are lattice work or scray arrangements to carry the piece well away from the rollers and extend it out in the liquor. The whole of this arrangement is fixed on a lever, so that it can be swung in or out of the dye liquor as occasion requires. Often below the rollers a lattice work tray is provided in which the cloth falls as it is delivered by the rollers. Since the first introduction of these machines several minor improvements have been made with a view to their greater efficiency.

In Turner's hawking machine, there are two drawing rollers only. These are grooved and in the grooves are placed bands of metal fastened to the lattice framing or scray lay, as it is sometimes called. These metal bands act as strippers to the rollers, preventing the pieces from winding round them, while they also act as guides to the cloth, making it go straight to the nip of the rollers. Sanderson's hawking machine differs somewhat from the two just mentioned. There is a pair of rollers immersed in the dye vat near one end, there is, however, no scray or lattice-work. On the top of the dye vat, at the opposite end, is a pair of squeezing rollers, driven by chain from the driving mechanism of the vat rollers. There is also a guide roller on the top of the vat. The piece or pieces are sewed together in an endless fashion and pass through the dye liquor to the squeezing rollers, by which any excess of dye liquor is squeezed out; then it goes over the guide roller to the vat rollers. In the case of indigo-dyed goods a certain amount of oxidation occurs during the passage through the air

Cæsar Corron has devised a rather interesting form of piece-dyeing machine Briefly it may be described as consisting of a small inner vat in a larger outer dye-vat. Above the outer dye-vat is a plaiting arrangement which lays down the cloth in the inner dye-vat. Here it remains a short time. Then a pair of dye rollers draws the cloth from this vat into the outer one From this it again passes to the plaiter, and through the cycle again until the dyeing is done.

H. Wardle, of Leek, has devised a machine intended for the dyeing of silk pieces, which demands a notice here It consists of a semi-cylindrical dye vat holding the dye liquor In this there rotates a skeleton wheel, the ends of which are formed of a number of arms. Between these arms are placed

a number of rods, round which is wound in a spiral form the piece to be dyed; the rotation of the wheel carries this piece through the dye liquor.

Of the dye-jiggers something has been said in a recent issue of this journal, to which reference can be made for this important type of piece-dyeing machinery.

Continuous dye-vats are now much used in the dyeing of logwood blacks on cotton and linen, and of the sulphur and direct dyes on the same fibres. The simplest consist of three or four compartments; some may contain more. These are fitted with guide rollers at the top and bottom, and the piece passes between these up and down in the dye liquor. Steam pipes at the bottom of the compartments serve to heat up the liquor to any required extent. Between each two compartments is a pair of squeezing rollers, which serve to squeeze out all excess of dye liquor; this flows back into the compartment. The squeezing rollers serve to draw the cloth through the machine. The various compartments may be filled with the same dye liquor or different liquors, as may be required to produce the color that is wanted. Usually provision is made for a continuous flow of dye liquor through the compartments to compensate for that withdrawn by the cloths.

For dyeing indigo on piece goods, Woodcock has a machine divided into one or two compartments while above is an arrangement of rollers. The cloth first passes through the dye tanks, then through a pair of squeezing rollers, next over the guide rollers above, during which time the indigo oxidizes. If the color be not deep enough the material passes again through the dye-vat, etc.

Newell's machine is constructed with a view of dyeing three pieces at once. With this aim, at the exit end are arrangements for winding off separately the three pieces.

The padding machine, as a means of dyeing piece goods, may be considered as a continuous dyeing machine. It consists of a box containing the dyeing liquor. Above this box is a pair of squeezing and drawing rollers. These draw the cloth over the guide rollers, through the dye liquor, then through the squeezing rollers, where all surplus liquor is squeezed out and the dyeing made level. There are minor differences in the details of the machine as made by different makers.—Dyer and Calico Printer.

SUBSTANTIVE DYES.

Most of the substantive dyes have the fault that when boiled with soap the colors bleed. As a rule, too, substantive dyes are loose in other respects.

F. Beltzer, a well known chemist, says the great solubility of these dyes is at the root of all their properties, whether advantageous as in requiring no mordant, or disadvantageous, as in want of fastness. They form colored precipitates in an extremely fine state of sub-division. In distilled or slightly alkaline water they dissolve partially, but with some amount of chemical action, and on cooling, or on the addition of a neutral salt, some of the dye precipitates. It often happens that so-called solution is simply the suspension of extremely fine but still solid particles in the dyebath.

The dyeing process with substantive dyes goes on exactly as is the case with aniline black. The less soluble substantive dyes, consisting of coarser particles, so that the undissolved dye soon settles to the bottom of the bath, are those least liable to bleed, but at the same time those fast to milling.

We see then that the process of substantive dyeing is mainly as follows: In the dyebath the dye is partly dissolved and partly suspended in the form of very minute solid particles. The goods when entered soak up the solution, and, in some way as yet unknown, appear to retain the coloring matter and to reject the solvent in which it was dissolved. In this way the equilibrium is constantly being disturbed and restored as long as the fibres are receiving more dye than they lose, and the degree of exhaustion of the bath depends upon the extent to which this equalization between the dye taken up and dye given up can be prevented. The fineness with which the dye is divided gives fastness to milling, but the fluctuations in the equilibrium of the solution are the cause of the bleeding. If a parti-colored dyed fabric is boiled in a soap bath, the excess of dye on the fibre dissolves in the soap and makes it act as a dyebath to other parts of the fabric and equilibrium is only established when the dye has been spread uniformly over all the fibres.

It is essential, therefore, if bleeding is to be prevented, that dyes should be chosen which fix on the fibre in such a way as to be unremovable by soap. This fixing can be done by impregnating the fibre with sodium naphtholate, drying, and passing through a diazotizing solution, or by carrying out the same three operations in the reverse order. Another way is to soak the fabric with a solution containing the nitrosamine of the diazo compound and also sodium naphtholate, dry, and develop in an acid bath or by steaming. Yet another method is to impregnate the fabric with a solution of sodium naphtholate, and the sulphite of a di-or tetrazo-compound, drying in the dark, and developing by the action of light.—Textile American.

THE DESIGNER.

What are the essential qualifications of a designer? We will sum him up at the end and something of his make-up may be gleaned as we touch upon his work. That is about all we can pretend to do, as we shall find him in touch with every process in construction and manufacture of the fabric. To particularize would lead us into endless profusion, for his work is without end.

What is originality in design? For a designer without this qualification is merely a copyist. We will treat upon this faculty from the color point of view. This feature is primary and the weave secondary. This being the case, originality consists in the colors, or blending and distribution of colors by means of warp and filling patterns. We obtain colors from various sources but the designer relies upon the dyer. He cannot use old colors over and over and obtain new effects or express originality. If he were to pursue this course he would soon degenerate into sameness, instead of that which should be the aim of every designer—smartness, fastiness and originality. Hence the dyer should be ever on the alert for new colors, and study, experiment and practise to that end. The designer should produce new color effects by means of twists and fibre blends from the new colors. We have pattern looms; why not blending cards for producing original fibre effects? Such blending would be far superior to the method now in use by hand cards. Studying and practising on these lines, do we, after all obtain originality? True, no one has ever produced the same effects with the same colors; but the same method has been many times practised with other colors. There is no originality in the method, and the effects, whether good or bad, must be divided between the designer and the dyer.

We will point out what we think one of the faults of our designers, and they seem to acquire the habit at the start. They feel it a sort of duty, leastways an obligation, to bow down to or tag after teacher or book. They think like and swear by them, as we glean from their writings and conversation. There is too much of this, and it is not conducive to originality,

and shows a woeful lack of independent thought. The designer should—he must—give the character-stamp of individuality to his work, or it goes for naught and himself ditto. He should cultivate independence in the acquirement of theory and practice. If there is any first step toward originality this is surely and most desiredly it. There is no originality without independence, no matter what the vocation. The difference in designs is no more than that which distinguishes human faces, and there is little more originality in a cast of features than in designs. And yet the designer should be able to stamp his work with a distinguishing mark. It is not allotted to everyone to be original, but one should possess individuality.

Every reference sample should bear his mark. These have become a necessity to the trade and often a burden to both designer and manufacturer. We are witness to 600 or 700 samples for one season's work. When times are good and goods selling, there is much less call for them, but when the buyer is indifferent and there is little likelihood of getting a move on the market, then comes the demand for these samples and the ranges are somewhat astonishing and a great strain upon the designer. An 8-set mill will keep three and four pattern looms humming upon three and four and one-half yard sample warps, and tie-overs in the loom at that. There is little opportunity for study or time for thought. It is a sort of shake-up of colors and trust to luck. If an acceptable pattern turns up he is in luck; if not, the only alternate is to shake over again. Under the circumstances, he can neither do justice to himself nor his employers.

And this is only a part of the designer's work. Given his colors there follows, construction or layout for the loom; dressing, spooling, etc., in which he has a hand. Laying out the warp and filling patterns is also his work. In addition to this are the previous calculations, which are no small item in his work.

Texture is also another feature. A word anent it. There are no hard and fast rules but will lead to a quagmire. If we copy, structure is made ready to hand. If construction, we usually know the weight beforehand, and can so divide warp and filling as to get the requisite structure and texture. Any practical designer can come nearer to it without than with any known rules. It is simply a matter of judgment acquired from practice. If the warp must weigh a given number of ounces, and the cloth so many ounces to the yard, then the structure makes itself, the warp deducted from the total ounces, the remainder goes into filling. If copying from sample, only the simple rules of arithmetic are required. But few inflexible rules may be used in cloth construction.—Fibre and Fabric

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CLOTH CALCULATIONS.

The ability to ascertain the amount of material, whether yarn, weft or size in a piece of cloth, is one of the principal requirements of all weaving students, and is also useful to all who are in any way interested in or connected with the industry. Previous to the introduction of steam power and the factory system, the weaving of textile fabrics seems to have been carried on in a most romantic manner, each district apparently having its own peculiar system of weights, measurements, rules and regulations, so that when the steam engine was introduced and the older hand-loom weavers thrown out of employment, the unification of the various systems, etc., became a necessity. In many cases this uniformity has not been reached, yet, as in the case of wage lists for weaving, counts of reeds, etc., though the tendency is to discard some of the most complicated of these lists, etc., and to use those that are most easily understood and worked.

There were several methods of counting the quality of counts of yarn, weft, etc., though now in the English and American cotton trade is only one, which, though it does not appear to please the foreigner, is still sufficiently useful and simple as to meet with the appreciation of those most intimately concerned.

The value of a yarn depends principally upon its fineness; the greater the length of yarn required to weigh one pound and more expensive is the yarn. The value of a piece of cloth, therefore, depends upon the quality of material used and the weight of this material, together with other expenses, such as the cost of weaving, preparation, management, and other expenses. The cost of raw cotton is regulated in the most direct manner possible by the laws of supply and demand. The manufacturer buys his yarns in various forms, such as cops, bobbins, bundles, ball warps, slashers' back beams, weavers warps, etc., so that the various processes through which his yarn passes preparatory to being woven add to the cost of production.

In order to find the cost of a cloth the student or salesman must first find the weight of material in the piece, and allow a certain amount for waste in both warp and weft. Certain manufacturers have methods of their own by which they can very quickly find approximately the weight of a piece of cloth and the selling price, but as these "short cuts" are not always exact, and not applicable to all the various types of cloth, there is no better way of ascertaining the weight of material in a cloth, or the weight required, than by considering separately all the various items which go to constitute a cloth. For instance: Find the quantity of warp and weft required to make the following cloth; 115 yards cloth from 120 yards warp; with in reed 32 in., 72 ends per inch in reed; 28's twist, 18 picks per ¼-in.; 24's weft, allow 40 yards per hank for waste in both warp and weft.

When allowing for waste divide yards by 800 instead of 840 to find number of hanks. The number of hanks divided by the counts gives the weight, and whenever the weight is given, to find the counts divide number of hanks by the weight. To find weight of material required for above cloth: Warp, multiply ends per inch; width in reed; length of warp; and divide result by 800; and by counts:—

$$\frac{72 \times 32 \times 120}{800 \times 28} = 12 \text{ lbs. } 5 \text{ oz. warp.}$$

To find weight of weft required: Multiply picks per inch; width in reed; length of cloth; and divide by 800 and by by counts:—

$$\frac{72 \text{ picks} \times 32 \times 115}{800 \times 24} = 13 \text{ lbs. } 13 \text{ oz. weft.}$$

12 lbs. 5 oz. warp.
13 lbs. 13 oz. weft.

Total weight required .. 26 lbs. 2 oz.

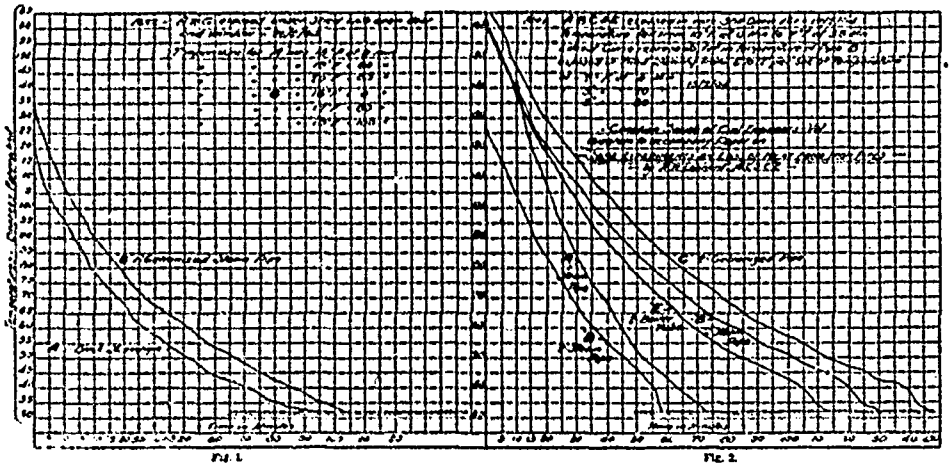
The allowance for shrinking varies according to the counts of material, number of picks, style of weave, etc. Calico cloths mill up the most owing to the warp and weft interweaving with each other as much as possible, and allowance for shrinking is practically nil in such cloths as velveteens (as regards warp), as the warp yarn goes in perfectly straight; the weft ends bending round the warp threads. Much depends upon the tension put upon the warp yarn, but 6 or 8 per cent. is allowable for most cloths.—Textile Excelsior.

A REMEDY FOR FRAZIL ICE.

At the first autumn meeting of the Canadian Society of Civil Engineers, a paper by R. W. Leonard was read detailing some "experiments on loss of heat from iron pipes." The fact brought out in this paper is that water when only slightly warmed loses its heat much more slowly when exposed to currents of cold air or water than when made hot. The practical application of this fact is that by forming ice racks of hollow tubes and connecting these tubes with a heating system, a remedy is provided for troubles from frazil ice. This remedy is especially applicable where there is a high head of water.

After giving data and tables gathered from his experiments, the author says:

Assume a boiler evaporating 9 lbs., water from and at 212 deg. F. per lb., coal or yielding 8,694, B.T.U.'s per lb., coal (latent heat 966 B.T.U.'s.) Therefore, the coal required per hour to warm water equals 41 lbs., requiring a grate area of 5 sq. ft. (with 8 lbs. coal burned per hour per sq. ft. grate area), or a boiler of 15 h.p. The quantity of water to be heated may be arrived at as follows: 1.6 lbs., water loses 31 temp., in 4 min., or at the rate of 290 B.T.U.'s per hour. Total loss from rack (as above), 354,603 B.T.U.'s requiring a circulation of 1,223 lbs., per hour or 122 gallons, or little over two gallons per minute. In order to avoid difficulties caused by the freezing of the water in the bars of the rack when the heating system is not being used, it would be desirable to use some fluid which freezes only at a very low temperature. It would appear that the same principle can be economically used to prevent the accumulation of frazil on other hydraulic machinery, such as water wheel casings, etc. It will be apparent to the reader that with a lower head of water and a corresponding increased volume, the circulation of a proportionately larger quantity of warm water would be necessary in order to effect the purpose desired, and there comes a point at which the object attained is not worth the expenditure of fuel necessary for the purpose.—Canadian Engineer.



From the above data it is possible to calculate approximately the amount of warm water it is necessary to pump through the hollow bars of a rack protecting water wheels in order to prevent the accumulation of frazil thereon, as it is necessary to raise the temperature of such bars but a fraction of a degree to accomplish this end. The curves indicate that water slightly warmed loses its heat much less rapidly than hot water when exposed in a tube to a current of ice cold water. To illustrate the practicability of this idea the example of one of the units in the extension of the Hamilton Cataract Power, Light and Traction Co's plant, near St. Catharines, may be taken.

The data are as follows: Head of water, 267 feet. Capacity of turbine, 245 c. ft., per sec., delivered through steel penstock 6-ft. 6-in. diameter. Power of each turbine, 6,000-h.p. Rack is 18-ft. 6-in. wide with length of 16-ft. submerged at ordinary water level.

Thin iron pipe can be flattened to serve as bars spaced as desired, and connected top and bottom with headers to form sections of the rack suitable for the circulation of warm water under pressure from a pump. The water area through the rack may be arranged to allow of a current of 1½ feet, per second, thus corresponding with the conditions existing in the experiments quoted above. Now assume the water for warming the rack to be heated to 66 deg. and returned to the heater at a temperature of 35 deg. after being exposed to a current of 1½ feet per sec., in ice cold water. This loss of 31 deg. takes place in 4 min from a 1-in. boiler tube from 1.6 lbs. of water = 50 B.T.U.'s from a surface of 1.463 sq. ft., or, say, 34 B.T.U.'s per sq ft. in 4 min. or 510 B.T.U.'s from 1 sq. ft. per hour. The total pipe surface submerged in such a rack equals 695.3 sq. ft., therefore transmission of heat from whole rack per hour equals 354,603 B.T.U.'s.

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—In a recent report to the Department of Trade and Commerce, on Canadian trade with Australia, D. H. Ross, the Canadian Government agent at Melbourne, says: "While the quality of Canadian cotton duck is quite equal (in many cases superior), to that produced in the United States, and Canadian discounts are slightly higher, the export business to Australia is capable of considerable expansion. It seems that all exports are under the control of a New York firm, and the latter apparently are not anxious that Canadian cotton ducks should have direct representation in this country. If manufacturers are in any way desirous of increasing their Australian trade they should take steps to make improved arrangements and remove disabilities under which their goods are now placed. The older brands of United States duck were first introduced, and are ordered as a matter of course, as many importers are entirely ignorant of the excellent qualities and good value of duck 'made in Canada.'" Writing on the wool trade, Mr. Ross says: "Several wool-buying firms have made enquiries regarding Canadian mills likely to require soft Australian wools for mixing purposes, and the information has been supplied. Manufacturers anxious to obtain their requirements at first hand—avoiding the Boston wool market—are invited to send full particulars to this commercial agency."

LITERARY NOTES.

The publishers of the Canadian Magazine are to be congratulated on the production of a very attractive Christmas number, which will make a suitable gift to send to friends abroad. It is pleasing to learn from the publishers that this magazine is displacing to a greater extent than heretofore the foreign publications so largely used here for Christmas souvenirs. In this number Mr. Waters, a returned self-supporting missionary, gives a picture of social life and customs in Tongaland. Sir Gilbert Parker tells of his experiences during his first days in the House of Commons. William Wilfrid Campbell contributes a two-page poem, and there are half a dozen short stories.

The fashion pages in the December Delineator are unusually attractive, illustrating and describing the latest modes in a way to make their construction during the busy festive season a pleasure instead of a task. A selection of Love-Songs from the Wagner Operas, rendered into English by Richard Le Gallienne and beautifully illustrated in colors by J. C. Leyendecker, occupies a prominent place in the literary contents, and a chapter in the Composers' Series, relating the Romance of Wagner and Cosima, is an interesting supplement to the lyrics. A very clever paper entitled "The Court Circles of the Republic," describing some curious phases of Washington social life is from an unnamed contributor, who is said to write from the inner circles of society. Many Christmas suggestions are given in needlework and the Cookery pages are redolent of the Christmas feast. In addition to the stories, there are the regular departments of the magazine, with many special articles on topics relating to woman's interests within and without the home.

The Silk Association of America have issued a pamphlet entitled "The Silk Industry of the World at the Opening of the Twentieth Century," by Franklin Allen, C.P.A., Secretary of the Association, a book of some sixty pages. Its purpose, according to the introduction, is "to trace the development of the silk industry in the principal countries which manufacture silk products, to describe the processes of manufacture, and to indicate the causes and present conditions of its progress and equipment at the beginning of the twentieth century." As a history of this great industry the pamphlet is both interesting and instructive. The beginning of sericulture in America, and the various attempts and failures to make silk culture successful here, the effects of protection on this industry, and the past and present methods of making silk, are set forth with clearness and with such a wealth of detail as is only possible to a writer who has been identified with and studied the subject during a lifetime. The author presents some interesting facts concerning the silk trade in the United States. He says: "Looking back 50 years at the end of the century the notable fact is apparent that the value of the American products in silk in 1900 was nearly 60 times as great as in 1850. The industry had spread from New England and the Middle States into many other States, although the comparative rank in importance was as follows: New Jersey, Pennsylvania, New York, Connecticut, and Massachusetts. Those States had respectively 180, 121, 92, 38, and 20 silk manufactories." The author also presents some valuable comparative tables very carefully compiled and of great usefulness. Forty-four pages of the book are devoted to the silk industry of Europe and Asia, giving in descriptive outline and in tabulated form the history and condition of the industry abroad. The major part of the article was prepared for the new Encyclopedia Americana, now being published by the Scientific American.

At the Thanksgiving Day Dinner in London last month, Sir Edward Clarke suggested that the United States of America might find a title more modest than "America," and more convenient than "the United States" by adopting the appellation "Usona," a word derived from the initials of the words United States of North America. The suggestion has met various receptions in the country to the south, some conceding that the present custom of designating the country 'America" is somewhat presumptuous, while others claim that the use of the term is quite legitimate, inasmuch as the official name of the country contains the word America, which is not true of any other country on either of the two continents. It can scarcely be disputed that anyone from an Eskimo to a Patagonian is an American, but it is probable that the people inhabiting the small territory known as the United States will with the advice and approval of John Hay, continue to appropriate the name of the whole western hemisphere. On the very day on which Sir Edward precipitated the discussion, the American Wool and Cotton Reporter issued a special "Greater America Number." It is a 64-page issue, and very creditable to the publishers, its special features being a description of the textile exhibits at St. Louis, and an article outlining the recent expansion of the textile industries of the United States. We look in vain, however, for any particular reference to matters beyond the bounds of the country of publication. We confess that we suffered from the delusion that Canada was part of Greater America, if not of America itself, but from now on we must bear in mind that all such sweeping terms refer exclusively to the United States. Watch them grow! New England; the United States; America; Greater America;—next!

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THE GREAT AND ONLY GRIFFIN.

(Monetary Times).

In connection with the subject of "Humbuggin, the Englishman," to which we have devoted a good many articles, we have a letter this week from J. A. Hunter, Hipperholme, Halifax, England, referring to "Doctor" Griffin, about whose escapades English exporters are now at last aroused: "A note in an editorial (p. 546), interested me. You speak of a 'clever cheat of a Doctor' representing Montreal trade papers. One man told me that his firm had neither paid, nor been asked to pay, for advertisements that were undeniably ordered and inserted. That fact seemed to add the last touch of comedy to an amusing situation. I never chanced to see the individual, though I plainly remember a description received from various persons two or three years ago. The man toured the country in a gorgeous chariot with flunkies, and—I fancy—a gorgeous wife and resplendent family. He was dressed like a regency buck, with frills to his shirt and adornments all over his person. The splendor of the creature took the breath of his customers, but I surmise that a second tour will be somewhat of a disappointment. He did create a sensation temporarily, and—though I forget whether the fellow called himself Doctor—I imagine this one must be the same man." Speaking of advertising and advertising people, "a New Yorker (the owner or manager of a dry goods paper) was shown the door recently for telling a friend of mine that he had heard in several quarters that my friend's people were ruddy fools. No end of invitations to dinner could make affairs any more pleasant. Neither rudeness nor surface glory seem to do much for trans-atlantics in the long run."

BRITISH TEXTILE CENTRES.

Manchester.—The Dyer reports:—While there has been a distinct improvement in the cotton trade during the past month, it has scarcely extended to the textile coloring trades as yet. There are signs, however, that before long the improvement will make itself felt in the trades in which we are interested. Calico printers keep steadily engaged. Dyers are working full time with a good promise for the future. Bleachers are busier than they have been. Finishers are doing fairly well, and have some reason to rejoice thereat, for this business has been poor for some time. Silk dyeing at Leek and Macclesfield has passed through a quiet time lately, but some signs of an improvement are apparent.

The Textile Mercury's correspondents write as follows of local markets:

Huddersfield.—Trade in this centre continues to make steady progress, though there were few evidences of activity presented in the market on Tuesday. The demand, both on home and shipping account, has made some advance during the week, and rather more attention has been made to cloths suitable for the winter season. This branch of the trade, received very little assistance from the weather last back-end, but should the present transformed conditions prevail for any length of time those who have been waiting their turn should find a market to their advantage. It has been noted of late that employment has been extended on goods for the Japanese Government, and certain firms are very busy upon orders. Wools have not sold well within the last few days, holders expecting a rise.

Kidderminster.—The heavy fogs have hindered travellers a good deal, but the trade is distinctly improving. More orders are coming in, and the demand for the delivery of goods is better, especially in the various qualities of Brussels. There was more doing in yarns, though usually in small weights. The whole trade is in a state of uncertainty pending the upshot of the wool sales, and spinners only sold with the greatest caution. Better prices were paid on Wednesday for carpet yarns, but it can hardly be said that they were in proportion to the price of the raw material.

Leeds.—Low-class goods were in most ready request in the market on Tuesday; the home trade remained quiet and the superior makes were difficult to sell. Australia and Canada proved a steady market, though the orders booked were not very large in bulk, but Japan placed some very big orders, amounting to about £1,500,000. Blue army cloth and blankets of a fairly heavy weight are the goods which are mainly being made for the Far East. With regard to the home-trade winter requirements were very scarce, and the bulk of trade for spring has not commenced, though makers-up are busy with sample garments. The price of raw material, especially in worsteds, was very firm, with an upward tendency, and to this cause must be attributed the small demand for the best qualities of cloths.

Leicester.—There were more enquiries in the yarn market. A very welcome stimulus has been given to the hosiery industry by the severe weather, and very heavy deliveries of warm fabrics are being made.

Rochdale.—In the flannel market on Monday there was more sorting up business, and prices were very firm, as the London sales are expected to make an advance. One or two of the mills have recently begun to work more time, but the bulk are curtailing production, although manufacturers are expecting an improved demand now that the weather has become colder, and there is better employment in the cotton district.

Belfast.—The market on Tuesday was steady in all directions, but without much in the way of improvement. The tendency, however, was in that direction, judging by the increasing number of enquiries. The spinning branch remained unchanged, with constant buying in a limited way at full current rates. Stocks in consumers' hands are exceedingly small, and spinners were pressed for deliveries. Foreign deliveries here are much behind hand. The manufacturing end was quiet, but a fair demand was maintained. Damasks were dragging. White goods sold a little to the home trade. For shipment, business was rather more than maintained, the United States, South America, and the Colonial markets being the turn better.

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WOOL MARKETS.

London.—The London wool auctions closed November 29th, with prices high and competition marked right up to the close. During the series 38,638 bales were taken by English buyers; 40,000 bales for continental consumption; 2,000 bales for America, and only 1,000 bales carried over for the next series. The sales closed firm and with a hardening tendency on all grades. Merinos were in steady demand throughout the series with fine varieties in the grease showing an advance of 7½d. Scoureds and medium greasy scored a net advance of 5 per cent., while faulty and inferior grades were unchanged. Fine crossbreds advanced 5 per cent., while medium and coarse gained from 10 to 15 per cent. Fine scoured slipes gained 10 per cent.; medium and coarse 15 per cent., and short inferior 20 per cent. Cape of Good Hope and Natal wool opened unchanged, but later hardened and closed 5 per cent. dearer. The only losing grade in the sales was short stapled lambs' wool, which lost fully 10 per cent.

New York.—Regarding the effect of the London sales on the New York market, the Textile Manufacturers' Journal said on the 3rd inst.: The course of the London sales has been watched with interest during the past week. Merino qualities had been regarded as the weakest feature of the market and users of fine wools looked to these qualities as perhaps affording some relief from the overpowering strength of the general situation. The gradual hardening of values, however, has extended to the fine wools and has been accentuated on coarser varieties, so there can be no relief experienced from any quarter now foreseen. Wool dealers generally regard the situation as materially strengthened by the result of the London sales. A prominent western wool house writes us in the following terms: "Have found a continued demand for all grades, but have been disposed to hold back until we could learn how the London sales opened and their effect upon the American market. It seems that all grades advanced as expected, some of them heavily, and there was active competition from American buyers who had been unable to supply themselves from this side. The lower grades of wool in this country have for some time been around the importing point, but the higher grades are yet a long way below the importing point. The supplies in this country are inadequate, and eventually all grades must be on a parity with the foreign market plus the duty. Prices have advanced abroad and are likely to advance further on account of scarcity and competition, and with every advance the importing point is lifted just that much." This portion of the letter which we have just quoted represents fairly the belief of the average holder of wool throughout the country. It certainly is logical in its analysis of the situation, but there is one important factor in the situation, which the

wool dealer should remember. This is the influence of price on consumption. An advance on goods proportional to to-day's prices of wool alone would raise a number of staple fabrics completely out of the accustomed price level and practically prohibit their use by some classes of clothiers. What sort of reaction this may cause in the primary markets is a matter of speculation.

Regarding the New York market, the Wool and Cotton Reporter says on the 8th inst.: Sales of large quantities of wool are very few, for two very good reasons. In the first place it is no easy matter to find dealers in the local market who are actually in a position to offer large stocks for sale. Secondly, manufacturers are by no means anxious to start on an era of speculative buying. They are told that prices are going higher, and do not go so far as to argue the question, but that they have grave doubts regarding the wisdom of making purchases for requirements very far into the future is plainly shown by their actions, for they are not disposed to lay in heavy supplies while the present high scale of prices exists. There is good reason to believe, however, that a good many operators are beginning to regard the future with considerable apprehension, and that they are making up their minds to employ substitutes, wherever such a course may be practicable.

Montreal.—Demand for wool is good, but so few mills left the quantity wool required is small. Cape is firm at 18 to 20c., according to condition; fine B.A., worth 37½ to 42c.; medium, 32 to 37½c.; coarse, 26 to 28c.; Canadian pulled, 26 to 28½., and very scarce. Stocks of all wool low.

Toronto.—Prices are advancing and no weak spots are to be seen in the market. Quotations are about as follows: Unwashed, 13 to 15c.; washed, 21 to 24c.; pulled supers, 23 to 25c.; extras, 24 to 26c. Some dealers quote higher figures than these, especially on pulled supers and extras, where their quotations are from two to three cents in excess of those given above.

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BRITISH WOOL AND TEXTILE MARKETS.

(Correspondence Canadian Journal of Fabrics).

Since our last report there has been a decided stiffening in prices all round, and the prices now realized in London show a decided advance on last sales closing rates. Indeed there does not seem to be any prospect of a lessening in the value of raw material in the immediate future, though the causes responsible for the present situation are of an exceptional and uncertain description.

The war demand may continue for a long time, or it may stop quickly. Then the American demand is a speculation justified by nothing that has yet happened. The manufacturers there seem to be looking for a boom in the general industries of the country as a consequence of the re-election of Mr. Roosevelt to the office of President, but it remains to be seen whether the expected will happen. In the meantime the anticipation of a boom, and the enormous speculations in consequence are causing a great amount of inconvenience in other wool consuming centres of the world.

Top makers here in Bradford are combing very few tops, finding it easier to dispose of the wool and make more money on it. The people who have combed heavy weights of tops are wishing they had them back in the wool, as they find it very difficult to dispose of them at a profit.

The outlook in the Huddersfield district is very satisfactory, and overtime is being worked in most of the woolen factories.

The activity in woolens for export still continues to be the chief feature of the Leeds trade. There is no falling off in the demand for low priced goods, Japan having given enormous orders for blue army cloths and blankets. So large have these contracts been that the firms who were fortunate to secure them, having found it impossible to complete them in the necessary time, have found it necessary to sublet them to other manufacturers.

From Germany comes the report that the demand for all grades of wool still continues to be good, and from Verviers (Belgium), we hear that spinners are sold up to 3 and 4 months ahead at satisfactory prices. The scouring, carbonizing, and finishing industries, however, are not doing very well.

At the time of writing the London wool sales have just opened, and the advances there have exceeded expectations. It is admitted on every hand that stocks are low, and it is a long time ago since we were as close to the back of the sheep as at present. Under these conditions we shall undoubtedly see high prices rule for some months at least.

A great deal of attention is being paid at present to silk noils, which are being very largely used in the fancy tweed trade. For many years these noils have been a drag on the market, whereas now the fashion has been created, prices have more than quadrupled themselves. From good and reliable sources we are informed that goods made from these noils are selling very freely, and likely to run during the coming season.

The arrangements for the transfer of the Bradford Woolcombers' Association to the new company appear to be practically completed, and it is hoped that now the business is placed on a sound financial basis, it will be successful.

Most of the large felt manufacturers in England, amongst whom the well-known firms, Mitchell Bros., R. Ashworth, Humphries Stansfield & Co., and others, have recently amalgamated, with a capital of £700,000 sterling.

Yesterday we had occasion to speak with one of the largest pullers in Magamet, who informed us that stocks in that town were well-nigh exhausted.

* * *

ENGLISH SPINNING, WEAVING AND SIZING HINTS.

The "Sharp-back" Principle.—In the new driving motion for mules it is possible to have the carriage and spindles starting and stopping before the other in any desired manner and proportion.

For example, during recent years a good deal of money has been expended on developing what is known as the "sharp-back" principle; that is, engaging the backing-off friction before the carriage got quite out, and actually commencing to back off at that point. In a manner this particular principle has been extensively and successfully attained in a modified degree by the application of the "strap-relieving" or "drawing-off" motion, which moves the belt upon the loose pulley partially or entirely before the carriage gets entirely out. If this motion is, however, applied too keenly, the carriage often fails to get fully out, and especially if the engine be running too slowly.

When two separate belts are applied—one for driving the spindles and the other for driving the carriage—it is obviously possible to provide change levers and springs by which one of the bolts can be moved before the other as required.

Take the sharp-back principle as developed in the above case. A few inches before the carriage got out the spindles

belt was moved on its loose pulley, and the backing-off friction charged about the same time. The carriage belt, however, was allowed to remain a little longer on its drawing-out pulley, so that no difficulty whatever was experienced in setting the carriage fully out upon the holding-out catch. The peculiar effect then resulted of having the reversal of the spindles actually commenced before the carriage got fully out. It will be at once asked how the last small portion of yarn obtained its twist, the answer being that the twist appeared to travel from the previously spun yarn by a process of natural distribution, much after the manner in which the twist runs into the yarn delivered by the winding delivery motion. It is doubtful whether this sharp-back principle would be of any advantage except in quickly running mules on coarse counts, there being various disadvantages, such as greater possibility of obtaining variation in twist per inch and incapability of being applied to mules equipped with supplementary twisting motions. To a somewhat less extent, however, the same remarks apply also to the strap-relieving motion, which, nevertheless, has had extensive applications.

When one belt was applied for driving the spindles and another for driving the carriage, it was found possible not only to put into operation the hastening motion principle, but also to produce exactly the opposite effect when required. It is well known that scores and hundreds of mules give snarls on the one hand, or cut yarn on the other hand, due to springing out of the carriage. With the method under discussion the spindles belt was for a time started on its fast pulley slightly before the carriage and rollers belt was put on the drawing-out pulley. The result was an altogether steadier and more level starting outwards of the carriage. When, on the other hand, it was desired to put into operation the hastening motion principle, this could be done to much greater perfection than with the ordinary driving, and an effect produced which might prove very serviceable for some kinds of yarn. For example, in extremely thick, coarse work of any kind it might prove serviceable to delay the spindle movement and the insertion of the twist until the carriage had moved out some little distance. Especially might this be done if carriage draft or gain was desired to be put in the yarn.

Sufficient has been said to make it quite clear that with independent and separated driving of spindles and rollers, infinitely greater latitude and power would be placed in the hands of an intelligent overlooker, while at the same time much more powerful driving would be readily obtained during twisting and drawing out.

This, too, would be feasible with much narrower down belts than have been found necessary in modern mules not equipped with duplex driving. As a matter of fact, actual experiment really did prove that with such driving well-balanced movements and effects could be produced.

While, however, pointing out the very great and novel possibilities of this method of driving, the writer is fully alive to the various disadvantages possessed by it, chief amongst them being the variability in the work and yarn rendered possible by the separation of closely connected parts.

As before stated, in the compound drving of Messrs. Asa Lees, in the combination driving of Mr. Moorhouse, and to a less extent in the split rim shaft and double rim pulley system of Messrs. Threlfall, we have had most determined attempts to still further tie together the principal motions of the mule, with the possible benefit of more uniform twist. The somewhat astonishing feature of these drives has been that the result, as regards uniformity of twist, in many people's opinion, has not been sufficiently great to compensate for accompanying disadvantages of one kind or another.

While an improvement has been in some instances manifest, it has not been great enough to attract spinners very much.

A query can, therefore, be set up somewhat on the following lines: If combination driving of spindles, rollers, and carriage by the rim-band is not sufficiently advantageous to attract spinners in this country, may it not be found possible to work on the opposite lines, and not only separate the spindles and carriage, by having one driven by a rope, and the other by gearing, but also to separate them by having separate driving belts.

In theory this appears to be going on wrong lines, but in practice it is the writer's opinion and experience that a sufficiently determined attempt would very possibly be found extremely beneficial, and might even revolutionize the driving of the self-actor mules.

One thing must be well remembered—the writer has only the interests of his readers in mind in treating upon this drive, having allowed the patents to lapse before referring to the matter.

Weaving Hints.

Healds, Reeds, etc.—Plain cloth of very coarse description requires but two healds, but the greater proportion of woven cotton fabrics are woven by means of four healds. The set of the healds should be as nearly as possible the same as the counts of the reed, so that the yarn may go straight from the healds to the reed without being expanded or contracted in the reed. It should be understood that the *healds and reed should be a little coarser than the quality* of the cloth; that is, if the cloth on the counter is 64 ends per inch, the reed should be coarser, say, for 60 or 61 ends per inch. This is owing to the contraction of the yarn from the reed to the width of cloth on the cloth roller.

The contraction of the width of the yarn does not take place evenly throughout the cloth, but is principally at the *sides, this necessitating strong temples to hold the cloth* out. Sometimes mistakes have been made in analyzing cloth, owing to the difference between the number of ends per inch in the middle of the piece and those at the sides. A very good way to counteract the variation in the number of ends per inch is to use what are called "bastard reeds"—reeds which are coarser at the sides than in the middle.

In Lancashire cloth is generally indicated by the number of ends and picks per quarter inch, but when reeds are mentioned, the counts indicate the number of dents on two inches or the number of ends in one inch of the reed if drawn in two ends in a dent. For some cloths, however, the ends are drawn in 3, 4, 5, 6, or more ends in a dent, whilst in some striped fabrics the drawing in of the ends is very varied, some dents being vacant, whilst others may be crowded. For crimp stripes composed of alternate stripes of plain and twill, the plain cloth yarn may be drawn in two ends in a dent, whilst the twill may have three or four ends in a dent. Generally speaking, cloth has a better appearance when the yarn is drawn in a fine reed, two ends in a dent, than in a coarser reed, three or four ends in a dent, but some cloths do not weave as well in a fine reed owing to the increased amount of friction on the yarn.

The setting of the healds in the loom has great effect upon the weaving of the yarn, and great care should be taken that all the healds are set so as to rise and fall in vertical lines. If some healds are tied up so that in rising they pull to one side, they will rub the yarn too much, and Lancashire yarn will not stand too much friction or strain.

In some cases what are called double reeds are used for very coarse yarns, these reeds having two rows of dents, the dents of one row alternating with the dents of the other row. In this case, if 40 ends per inch in the reed were required through 20 dents there would be 10 dents per inch in each row of dents, and the four ends in each back dent would be split in couples for each front dent. These double reeds permit of very rough yarns being woven.

Sometimes brass reeds are used when weaving wet weft, which has previously been steeped in soft soap water. It is also a very common practice in some sheds, in dry weather especially, when the weft is apt to curl, to steam the weft, which is a very good way to prevent the curls going into the cloth.

The selvage or self-edges of the cloth are often a very important matter. Some salesmen, in fact, seem to consider good selvages as important as the remainder of the cloth. Selvages are almost invariably of a plain weave, so that when weaving twills, satins, or other similar weaves of cloth it is often necessary to employ skeleton selvage healds, which are used only for the selvage ends. When the weave of the cloth and the lifting of the healds permits of the alternate rise and fall of some ends, the selvage ends may be drawn in through these healds, as in some mattings, etc., but, most mattings being woven two picks in a shed, it is often necessary to have catchcords in addition to the selvage ends, these catch-cords lifting every pick, and so preventing the shuttle from pulling the first pick back. Some mattings may be said to have no selvages, only catch-cords. Selvage yarn should be stronger yarn than that of the body of the cloth. Selvage yarn should be somewhat elastic, so that for this reason doubled yarns are often preferred.

Notes on Sizing.

Containing with the weighting materials that can be used in sizing there are sulphate of lime, magnesia, soda, baryta, and china clay, the latter being most commonly used; while the others have been neglected, and are used not only as additions to china clay. Sulphate of lime (or plaster of Paris) is produced from gypsum by grinding, and is sometimes used as a filling agent by bleachers. Sulphate of magnesia (Epsom salts) is easily soluble, and has the reputation of being a good yarn filler. Sulphate of soda is made up of water, soda, and sulphuric acid. Sulphate of baryta (heavy spar) is a very heavy mineral. The powder is harsh to the touch, and exerts a most serious filing action on healds and reeds in the operation of weaving. Further, it is not easily fixed on the fabric, not so valuable as a filling material, but is used where weight and harshness of feel is required.

China Clay.

This substance is found in many mountainous countries, the varieties found in China and Japan being whiter than those obtained in the South of England. As the fixing of the clay to the yarn is, to a great extent, dependent upon the quality, it is, therefore, an important matter that the buyer should be able to decide on the right thing. Briefly described, it should be free from gritty matter, of an oily, unctuous feel, and uniform in color. It has not escaped the adulterator, and many such qualities are forced upon the market. It is difficult to detect pure from impure by eye, but this is soon determined when a mixture has been made. An important quality of china clay is its affinity for water. Before using china clay some size is first boiled in water; others mix it with the starchy ingredients, and then boil. If boiled alone it is apt to bubble and spurt, but this can be stopped by adding soap, which has the property of making it boil thinner. Another name for china clay, but one rarely used, is kaolin. There are many methods of testing china clay: some place a small quantity between the teeth, where the least grittiness would be easily detected. The color should be watched, and sampled for color, etc., same as flour. Another method is to place a small quantity between two glass plates, enough water added to make it into a thin paste; they should then be rubbed alternately with the finger, and the feel noticed; by this means the degree of harshness can be readily determined. If it be wanting in smoothness, it may be owing to the presence of chalk of limestone, which may be ascertained by adding a few drops of hydrochloric acid to a small quantity of the sample in a test glass, and if the mixture effervesces some carbonate is present as an impurity, which will most probably be chalk or limestone. Pure china clay should not effervesce when treated with acid.

Whitening Materials.

Every class of material added to a size-mixing tends to darken the color more or less. Pure flour alone has the same tendency, and this is greatly increased when china clay is added. The darkening of the yarn has little of an injurious effect upon it, but it makes the cloth look less attractive in appearance before bleaching or dyeing. To prevent this, and to preserve the whiteness of the yarn, small quantities of blue are generally added to size-mixings. Blues are sold in solid or liquid form; some use the former, and some the latter. The solid form is the best, as adulteration is more likely with the liquid. Liquid blues are very often of an inferior quality, so that solid blues are in more general use. In choosing blue for sizing purposes it should be known that the violet-shaded blue is much superior to the green for the purpose of whitening. The blues which may be used in sizing are: Aniline, Prussian, indigo, and ultramarine. Of these the aniline is the best, and now generally used; it is inexpensive, gives a comparatively clear bright tint to the yarn, and is perfectly fugitive if the material requires to be bleached. It is sometimes called Victoria blue. Prussian blues have a greenish tint; indigo blues are fast; ultramarine blue would do for size mixtures, but the color is discharged by acids, and an objectionable odor is produced. Nicholson's blue is a soluble blue often used by sizers; it is also known by the name of alkali blue. One variety is known as an alcoholic solution, called No. 1 spirit blue. The color is, however, precipitated on the solution being diluted by water, but the precipitate is in such a fine state of division that it tints the size evenly. Spirit blue powder is also sold, and to prepare it for use some two or three ounces should be boiled for a short time with one gallon of methylated spirit, the solution poured carefully off the insoluble sediment, which should be heated with from one quart to half a gallon more spirit. This solution should be diluted with from five to ten times its volume of water before being added to the size, and it is well to prepare the solution immediately previous to use, and employ it whilst hot, because on standing much of the color will be precipitated. With the whitening constituents the description of these various substances combined in size mixtures is complete. We have omitted reference to patch and other specially prepared compositions, which are very numerous. Of the latter some are worthy of a trial by manufacturers, but the majority of them are of no use whatever for the objects mentioned.

Size Preparation.

Size preparations consist in the blending of the various adhesive, weighting, deliquescent, softening, and antiseptic substances in certain proportions. The proportions depend upon the class of cloth to be woven, or for a given weight of yarn. To make the process thoroughly successful the points which must be taken into consideration are: The weight to be added; the class and counts of yarn; the amount of twist in the yarn; the class of cloth to be woven, whether grey, dyed, or bleached fabrics; the humidity of the atmosphere; the materials to be added to the mixing; and the consistency or specific gravity of the mixture when completed. In producing a size mixture, care must be taken to see that only those ingredients be added together which are known to assimilate well. Some substances have a decomposing effect upon others, although each under different circumstances might be used as size ingredients. The amount of moisture in the atmosphere is a feature which should be more fully considered in sizing than it is. One composition, which will adhere in a moist surrounding, will fall off if the air is dry. A damp atmosphere is, of course, always the best when heavy sizing is to be resorted to, and a variable humidity is the worst. As a result of the changes of humidity, on the floors under the looms there is always a large amount of dusty white material to be seen, which proves that a considerable percentage of size is being removed in this manner, and by the action of healds. In setting about the preparation of a size mixing, it is obvious that the first consideration must be the weight which is to be added. No fixed rule can be laid down for the quantities of different materials which are to be added in order to produce a certain percentage of increase in the weight of the yarn. So many points, as we have already stated, are to be considered, that a mixing which would give one result on yarns in one concern might give a different result in another, although the class of threads and composition of the mixings are alike in both cases. As previously stated, the object of mixing was for the purpose of laying down the fibres of the yarn to undergo the strain and friction of weaving. In some cases English yarn can be made to contain 200 per cent. of foreign matter; or, in other words, when a pound thread passes through a sizing machine it comes out three pounds in weight. All the process may be of doubtful honesty; this cannot be laid at the door of the manufacturer. All he does is to supply the dealer with what he is asked for. India has much to answer for in encouraging the practice of increased sizing, and, as one writer has put it: "They have no objection to clothe themselves in a mixture composed of flour, tallow, and china clay, to which a little cotton has been added to make it stick together." For many years the only method of laying the size upon the yarn was by a brush, but as the weighting increased it was found that the process became too slow, as it took a much longer time to saturate the yarn than merely to cover the outside with the preparation. A machine called the "slasher sizer" is now used.—Cotton Factory Times.

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Geo. B. Sippi is now the western representative of Robinson, Little & Co., dry goods jobbers of London, Ont. He will reside in Winnipeg.

Woolen manufacturers will regret to hear of the death of Edward W. Carter, son of the late E. T. Carter, wool dealer of Toronto, who succeeded to the business of the late John Hallam. On the afternoon of the 30th November, Mr. Carter went home feeling unwell, and died the same night, death being due to heart failure. He was only 23 years of age. Following so closely on the death of his father, his decease will be a great grief to his family and friends. The business will be carried on by his brothers, Henry J. Carter, the senior member of the present firm, and W. E. H. Carter, Inspector of the Bureau of Mines of Ontario.

Hon. John Dryden, Ontario Minister of Agriculture, who for the past twelve years has been president of the Shropshire Registry Association of America, resigned that position at the recent meeting of the Association at the Live Stock Show in Chicago. Dr. Davidson, of New York, succeeds Mr. Dryden in the president's chair.

Allison H. Sims, of the firm of A. H. Sims & Co., shirt, collar and cuff manufacturers of Montreal, left his home in Montreal on Saturday, November 5th, and is still missing. No explanation of his absence has yet been obtained, and the efforts made to trace him, have so far, been vain. Any information will be welcomed by his brother at 54 Latour Street, Montreal. When Mr. Sims left his home, ostensibly to go for a walk, he wore a dark suit under an olive green waterproof coat, and a black Derby hat. He wore a blue striped shirt, with gold sleeve links with the initials, A. H. S., on them. Mr. Sims is dark in complexion, and has small side whiskers and moustache. He is fifty-two years of age, and is five feet eight inches in height.

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SCAB IN SOUTH AFRICA.

The Minister of Agriculture of Cape Colony recently called a conference to discuss ways and means for the eradication of scab from the flocks of the colony, and 78 delegates from all parts of the country met in Beaufort West. The colony has had a Scab Act for the past ten years, which has been of great service, but there is a desire to revise the act in some way so as to make it more effective.

What has been accomplished by the present act may be seen from the fact that ten years ago, before the passage of the act, the average weight of a Cape fleece was about 5½ pounds, while last year it was seven pounds. But for the act it is estimated that last year's clip would have been less by fourteen million pounds' weight, which at a reasonable figure means two million dollars. Whole areas that were once hotbeds of the disease have now been cleared of scab.

Scab abounds in England and the United States, but it is said that South African wool is the worst that comes on the London market, and it gives buyers more trouble than the wools of all other countries put together. Hence the necessity for strong action at the Cape. When scab attacks an animal it always does the greatest mischief on the most valuable part of the sheep, sacrificing the best combing part of the fleece. Not only is the fleece lightened and reduced in value, but the market value of the animal is of necessity reduced. Thus the presence of scab is a curse to the farmer, to the sheep, to the wool, and to the users of the wool.

Australia and New Zealand have been free from scab for several years—in some states for as long as 30 years—and in any country where there is determination on the part of the people the pest can be got rid of. Stringent measures are necessary, with the application of force to delinquents. United action is an essential for any such undertaking, to be obtained freely if possible, otherwise if not. In New Zealand £50 fines were found very effective in producting this desired unanimity.

—There appears to be a famine threatened in crude rubber. Last year this material was $1 a pound, but this year it is costing manufacturers $1.33 a pound. In 1902 it was only 70 cents a pound, having almost doubled in the three years. Rubber is now used so extensively not only in the boot and shoe trades, and in textile fabrics, but in the electrical and other trades, that the shortage will be a problem to many manufacturers, until new rubber tree plantations can be grown.

—A few copies of the Canadian edition of the American *Textile Directory* may be had at this office. This edition is published at $1, but the small remnant now left will be sold at 75 cents a copy while they last.

Oliver Wilby, who died recently at Weston, Ont., at the age of 64, was formerly well known in the woolen manufacturing business. He came to Canada about 1870, from Ossett, near Leeds, Yorks, where his father had been engaged in the woolen business. He settled at Weston, where he ran the Weston Woolen Mill, which was first carried on as a two-set mill, but was afterwards enlarged to make shoddy and cheap grade woolens. In 1883 it was formed into a joint stock company with deceased as president and John Sykes manager, with F. W. Newman as selling agent. The mills were burnt out twice, and failed and closed down in 1895, since which time deceased ran a commission business in paper, mill and upholstery supplies.

—It was reported that a special effort would be made in the first full week of this month by the Fall River cotton manufacturers to break the remarkable strike in the mills there, but a despatch of the 5th says: Contrary to general expectation, no concerted attempt was made to-day by the cotton manufacturers of this city to break the great strike of their operatives by importing a large number of workmen from outside points. There was no marked change in the situation early to-day. All the mills opened their gates, and the rate of gain was about the same as on previous days since the mills were reopened. At some places a number of extra hands went in, while at others there was practically no increase. There were no crowds about the mill gates and no disturbances occurred.

Those who have automatic sprinklers in their factories and warehouses should keep their employees instructed in the use of them. Even firemen may make mistakes that will cause serious damage. A case in point occrured the other day at the warehouse and factory of the Flett-Lowndes Co., fancy dry goods jobbers and clothing manufacturers, Toronto, who had equipped their place since the big fire with a modern system of sprinklers. An alarm of fire was sounded, and the sprinkler valves were turned on. This quickly extinguished the fire, but the firemen in turning off the valves turned on the water from the water tank at the top of the building, thus allowing 20,000 gallons of water to be emptied into the three lower flats of the building, and spoiling about $10,000 worth of stock, part of which belonged to the Consolidated Cloak Co., which had quarters in the building.

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CHEMICALS AND DYESTUFFS.

We have to report a fair demand for dyestuffs, prices remain firm. Chemicals are quiet owing to most buyers having bought before close of navigation, heavy lines are advanced owing to winter freights.

Bleaching powder	$ 1 40 to	$ 1 60
Bicarb soda	1 75 to	2 00
Sal. soda	0 75 to	0 90
Carbolic acid, 1 lb. bottles	0 35 to	0 40
Caustic soda, 60°	2 10 to	2 25
Caustic soda, 70°	2 35 to	2 50
Chlorate of potash	0 07 to	0 08
Alum	1 75 to	1 95
Copperas	0 50 to	0 65
Sulphur flour	1 50 to	1 60
Sulphur rock	1 45 to	1 80
Sulphate of copper	0 06 to	0 06½
White sugar of lead	0 07 to	0 08¼
Sumac, Sicily, per ton	45 00 to	50 00
Bich. potash	0 07 to	0 08¾
Soda ash, 487° to 587°	1 15 to	1 25
Chip logwood	1 50 to	1 75
Castor oil	0 07 to	0 08
Cocoanut oil	0 07 to	0 08

Canadian exhibitors in the sheep department of the Chicago Live Stock Show last month took prizes in nearly every class. The first prize for wethers went as follows: Shropshires, John Campbell, Woodville, Ont.; Southdowns, Sir George A. Drummond, Beaconsfield, Que; Hampshires, Telfer Brothers, Paris, Ont.; Lincolns, J. T. Gibson, Benfield, Ont.

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