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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XVI. TORONTO AND MONTREAL, DECEMBER, 1899. No. 12.

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MODERN FLAX SPINNING.

BY H. R. CARTER.

(Continued from last issue)

The parcels of flax, when "weighed in" from the roughers, and the quantity of long flax, tow, waste, and shorts entered upon the respective parcel tickets, are ready to be sent to the machines when required The roughing-master should examine each rougher's tow regularly to make sure that it is not too "long"—i.e., that no long fibers, which should have been replaced in the piece after "dropping," have been run into tow The quantity of roughing tow depends entirely upon the way the flax has been scutched and handled Flemish, Dutch, and Courtrai can often be roughed with three or four lbs of tow per parcel, while badly handled Irish, "stuffed" Baltic, etc., often produce 20 lbs of roughing tow per parcel of 2 cwt. The value of roughing tow varies from 18s. to 40s. per cwt, the former figure being for Baltic, and the latter for fine Courtrai Roughers are paid per cwt, the current rates being—Foreign, 1s. 7d.; Irish, 1s. 9d; and the maximum wage fixed by the Roughers' Society, 21s. per week "Stacking" is usually paid for at the rate of about 8d per cwt Coarse flax, usually Baltic, intended for heavy yarns, such as Scotch dry-spuns, is sometimes hand-dressed or finished in one operation ready for the "spread boards" The hand-dresser, in addition to the ordinary rougher's hackle, is provided with a No 8 or No 10 and a switch Having roughed the piece in the ordinary way, he continues to hackle and split up the fiber upon the finer tools, and, finishing it upon the switch, puts on a sorter's "lap," and builds the pieces into a 20-lb bunch, when it is considered ready for the "spread-boards"

The process which follows roughing is that of machine hackling, where an iron clamp takes the place of the workman's hand in retaining the flax, while moving combs effect the sub-division of the fiber into its individual filaments The "parcels" of flax are removed from the roughing-shop to the machine-room as required The bunches are loosened from their bands and put upon tables at the coarse or filling end of the machine, the root ends being turned from the boys, who take two pieces at a time, and leaving the root ends projecting about 12 inches, place them level and flat, one piece on either side of the central screw, and, spreading them well out upon the bottom of the holder, tighten the lid firmly down upon them. The holders are placed one at a time in the channel of the machine, when it is approaching its highest point, and are then shifted automatically forward step by step, every time the "head" rises, over hackles gradually increasing in fineness, until they are delivered at the fine end, where the holder is placed in a "stand," another holder being placed in a corresponding position about 2½ inches

distant. The hackled end of the flax is tightened into this holder, and the other being removed, the new holder, with the top end now projecting downward, is placed in the channel of the other machine, where it undergoes the same process and is delivered finished at the fine end. The boys remove the finished flax from the holders, and crossing each piece in a "tipple box," form a compact bundle or tipple, the ends of which are tied or "tippled up," and the bundles removed to the sorter or direct to the spread-boards, as the case may be.

One of the first machines for hackling flax was that of Robinson, which only hackled one side of the piece at a time. Machine hackling has been greatly improved since that date, but is still by no means perfect. The precursor of the modern vertical sheet machine was Ardell's Intersector, which consisted of two rollers covered with pins, working close together, the tow being removed by brushes. It is obvious that by such an arrangement only that portion of the piece for the time being in the point of intersection of the rollers was receiving any work, so that each portion of the piece had to remain there a certain length of time. The pins also came in contact with the piece with their sides and not their points, and consequently lacked penetrating power, the point of contact also being a long way from the "nip" of the holder, resulting in a consequent loss in yield. An obvious improvement was the substitution of vertical sheets for these hackling rollers.

Modern hackling machines are of two kinds, brush and doffer and stripping-rod, the former being more suitable for fine flax than the latter, but occupies more room since the two machines composing a pair must be separate, it being found impossible to place them as close together as in Horner's duplex stripping rod machine. The terms "brush and doffer" and "stripping-rod," refer to the means whereby the hackles are kept clean and free from tow. The vertical sheet hackling machine consists of two or more "gables," supporting in the single machine one pair and in the "duplex" machine two pairs of vertical sheets of hackles, the mechanism for clearing the hackles of tow, the "head" or "channel" which carries the "holders" or clamps for the flax, and the necessary gearing for giving motion to the various parts. The sheets consist of three or more endless bands of leather five or six feet in circumference, and carrying 20 to 30 bars, to which the hackles are directly or indirectly attached. The length of the "leathers," or their outside diameter, equals the number of bars multiplied by their pitch or distance apart—say for 30 bars 2½ in. pitch 30 x 2½ = 75 in. These sheets are carried at the top by bearing rollers usually about 2½ in. diameter, and driven by bottom rollers from 9 to 10 in. diameter by means of projections on the roller and recesses in the sheet, or vice versa. Thus the working side of the sheets can be set more or less parallel, both the top and bottom rollers being adjustable horizontally, so that the action of the hackles may have effect upon any length of fiber presented to them. The penetration or "striking in" is fairly direct, and the point of intersection within a short distance of the nip of the holder, since the hackles or bars can be attached to wings which rise tangentially as they round the top roller.

In Horner's brush and doffer machines the bars consist of flat iron rods about 3-16 in. thick, and 1⅛ in. broad, with a flange on one edge. The bars are screwed to the "wings" of a piece of iron, the body of which is attached to the back of the leather by means of screws and washers on front side. Horner's newest machines have top rollers about 2½ in. diameter, with bosses shrunk on in position corresponding with the leathers of the sheet. These bosses are recessed to receive the plates attached to the back of the leathers, and thus the hackles fixed upon the bars are thrown forward so as to directly penetrate the flax close to the holder. The bottom rollers are also furnished with bosses about 10 in. diameter with projections upon their periphery, between which the pieces attached to the leathers fit and furnish the means by which the sheet is carried round.

The hackles consist of wooden stocks, usually 10 in. to 11 in. long, 1 in. broad, ⅜-in. or 7-16-in thick. To obtain a sufficiently firm foundation for pins set very close together in the row, it is found necessary to cover the wood with thin sheet brass. The pins are of steel, 1 in. to 1¼ in. long over all, and from 14's to 30's B.W.G. Set in double rows in the stock they are about ¼-in. apart. The distance apart of the pins in the same row varies, in the coarser hackle being frequently 4 in., or ¼-pin per inch. In the finer hackles the pins are sometimes so close as 70 per inch. "Grouping" the pins is of great importance. An illustration will explain the meaning of this term. Suppose that in a 30-barred machine the fineness of one of the rounds of hackles is ¼-pin per inch or pins 2 in. pitch. If all the pins in each of the 30 hackles comprising this round were set in exactly the same position, bands of fiber 2 in. broad would be left untouched by the pins. In order that no portion of the flax may be left unoperated upon, the first pin in each succeeding hackle must be placed 2-30 in. further from the end of the stock than in the preceding hackle.

A good way to arrive at the correct position of the first pin in each of the hackles in the group is to place close together a number of hackle stocks exceeding those in the group by one. See that the ends are quite square. Determine the position of the first pin in No. 1 hackle at a distance from the end compatible with strength. Suppose that there are to be 12 hackles in the group, and the pitch of the pins 1 per inch. Mark a point in the last or 13th stock 1 in. further from the end than the first. Join these points with a diagonal line. The correct position of the first pin in each of the

12 hackles is in the intersection of this line with the line of the row. The drilling machine being set and the first hole drilled in the correct spot, the rest are automatically spaced at their proper pitch. If there are to be two rows of pins in the same stock, the pins in the second row are placed opposite the spaces in the other, the two rows being about ¼-in. distant. The finer hackles are usually made with two or more groups to the round, the position of the pins being arrived at in a similar manner to that just described. Thus a 30-barred machine may have 2, 3, 5, or 6 groups to the round, each containing 15, 10, 6, or 5 hackles respectively. In fixing the hackles upon the bars, No. 1 hackle in each group should be on the same bar, and the others follow round in consecutive order, so that if say the No. 1 hackles on each sheet be placed point to point, and the sheets geared and turned round, the numbers upon each sheet may correspond each to each. In working, the hackles must be turned into groups, so that the No. 1 hackle on one sheet follows the middle number of the group on the other sheet. Thus, with 10 in the group, No. 1 hackle on one sheet follows No. 5 on the other, the hackles striking the flax alternately, so that when intersected they cannot strike each other. It may be seen at once if the hackles be correctly set, by looking down from above between the two sheets. The pins in one sheet must appear to divide the spaces between the pins in the other. When viewed from the same point they will also appear in parallel rows both extending from right to left or vice versa.

The other parts of the machine, briefly described, are the holder, which is a screw clamp, consisting of two plates of iron, 10 in. or 11 in. long, 4½ in. broad, and ¼-in. thick. The lower plate has a screw, say, ⅝-in. diameter, and 3-16 in. pitch, fixed in its centre, and perpendicular to its plane, and long enough to project through the lid, so that both, with two pieces of flax between, may be firmly tightened together by means of a nut. Thus far Horner's and Cotton's holders are practically similar; they differ only in the projections upon which they hang in the channel. Horner's holder has two pins, about 3 in. long and ⅜-in. diameter, fitted firmly, into the upper corners of the lower plate and projecting 1 in. on the lower side. The lid is plain, with three holes bored in it—one in the centre to receive the screw, and one in each of the upper corners to admit the pins. In Cotton's machine the carrying pins are divided in two, half of each being attached to the bottom of the holder and the remainder to the lid. Since only the central tightening screw projects through the lid, two steadying pins are required to ensure the lid being kept straight on. The "channel" or "head" consists of two cast-iron rails of angular section, carried the whole length of the machine, and projecting about 18 in. at either end. The rails are connected at both ends by means of an iron bridge, to the upper part of which the suspension leathers, 3 in. broad, are fastened by means of loops and pins. The lower part of the bridge at both sides carries two adjustable screws, upon which the "head" rests when down. On either side of the bridge is a groove, which guides the head as it slides up and down on two feathers in the gable of the machine. The breadth of the "channel" is about 3½ in., just sufficient to admit the projecting bearing pins of the holder, which in Horner's machine is thus kept in the centre of the channel. The lower edges of the flanges are about 1½ in apart, which is sufficient to admit the holder filled with the largest pieces required. Cotton's channel is much the same as Horner's, but wider. The space for the body of the holder is fitted with a strip of steel at one or both sides, which is kept tightly pressed against the sides of the holder by means of springs. It is also suspended by leather straps passing over smooth pulleys keyed on a top shaft, being balanced by weights equal to the weight of the channel full of holders. We have drawn attention to the fact that the top-carrying rollers of the sheets are adjustable horizontally, so that the distance apart of the pin points may be varied at will, being either open, point to point, or intersected. In whatever way they are set, their points must be equidistant from a vertical line dropped through the centre of the piece of flax contained in the holder, so that the latter may be worked to the same degree on both sides. If the construction of Horner's and Cotton's holders be borne in mind, it will be seen that in the former the position of the vertical line through the centre of the piece depends upon the thickness of the piece; while in the latter, with springs on both sides of the channel, its position is constant, and corresponds with the centre line of an empty holder. In setting the intersection of Horner's machine, then, clamp a plumb line in the centre of a holder packed with wood or cardboard representing the average thickness of the pieces of flax. In Cotton's machine it is not necessary to pack the holder, for the reason shown. Place the holder in the resting channel at either end of the machine, with plumb bob hanging down, and set the sheets to their correct position.

A great deal of skill has been expended by the various makers upon the means of giving the "head" an up and down motion, which is positive and uniform in speed, and capable of adjustment as regards length of traverse and duration of "rest." The holder full of flax should be put into the channel when it is at its highest point. The flax should be lowered slowly and uniformly into the hackles. If delivered at the same speed at which the sheets are traveling no work is done during its descent. If delivered more quickly the flax tends to gather up and become looped when it is cut away, as the "head" comes to rest. The flax should also be withdrawn at a moderate speed from the hackles since their action is then more effective. It is convenient to be

able to regulate the length of time during which the head remains at rest at the bottom, when the piece is subject to the action of the hackles from the holder downward. Since this is the only period that the hackles can act on that portion of the piece next to the holder, it must be of sufficient duration to allow of the proper sub-division of the fiber at this point. It is also convenient to be able to adjust the height of the lift to the length of flax worked, so that extra long flax may not drag in the hackle whilst being shifted, and that time be not wasted in lifting an unnecessary height.

There are three types of lifting mechanism. One of the simplest and lightest driven is a large wheel driven by a retarded train of gearing from a pinion on the pulley shaft. There is a radial slot cast in one of the arms so that a stud may be fixed at any distance from the centre of the wheel. A rod with elongated eye and link chain connects this stud with a cam keyed on the end of the top shaft before mentioned as carrying pulleys over which the straps which suspend the channel run. The connecting rod being adjusted to a suitable length and the wheel revolved, an up and down motion is obtained with or without a rest at bottom and without a rest at top of lift. Since the wheel revolves at a uniform speed, to obtain the maximum lift the time of rest must be sacrificed. In machines intended for short flax and "cut line," on which these wheels are used, a smaller wheel is fitted than in a machine intended for "long line." For a maximum lift of 20 in. a wheel of 96 teeth is usually employed, while the ordinary "long line" machine has a wheel of 120 teeth. If the action of this wheel can be carefully studied, it will be seen that the vertical up and down speed of the stud varies, reaching its maximum as its path intersects a horizontal line drawn through the centre of the wheel. To remedy this defect, the aforementioned cam is used, being shaped and keyed on the top shaft in the position necessary to effect this object.

(To be continued.)

THE TEXTILE INDUSTRY OF CANADA AND THE CENSUS.

It is to be hoped that when the next Dominion census is taken, there will be a reform both in the system and execution of the work. We have as our chief statistician, as able, painstaking, and systematic an officer as can be procured anywhere, but it is no reflection on Mr. Johnson to say that as far as the textile industries, and a number of allied trades, are concerned, the figures of the last census are worse than useless. They are actually misleading, as was shown in many cases in our comments on the census of 1891. Mr. Johnson simply carried out his work on the lines of the previous census, and did the best that could be done with the material submitted by the collectors. It is evident, however, that a large proportion of these census takers were utterly incompetent to begin with, while others, more intelligent, were not properly instructed from headquarters, as to the details of their work among manufacturing concerns.

In our articles on this subject, published in 1892, the gross errors regarding the cotton mills and the sail, tent and awning manufactures, were given as samples. We may now cite a few other specimens. According to the last census, Canada had only one cordage factory, and that was at Port Hope. Under the heading of "Rope and Twine Factories," twenty establishments were reported having an aggregate capital of $510,525, employing 767 hands, with annual wages of $203,897, using raw material to the value of $1,045,420, and producing goods to the annual value of $1,493,534. These were the items of information given in the census of 1881, and the same plan was followed in 1891. If the cordage factory had been placed among the rope and twine factories, the information would have been more complete, but even then such information on the annual value of the output, material used, etc., is of doubtful value. The head of each factory has a different idea of value, one giving the cost of goods, another the manufacturers' price to the trade, and a third the retail price. How unreliable such figures are, may be gathered from the fact that the value of material used by the one cordage factory reported for Nova Scotia was put down at $550,000, while the total of the twelve cordage factories of Ontario is placed at $195,820, and the four of Quebec at $52,900. The figures of the annual value of the output of these factories are: $700,000 for the one Nova Scotia factory; $351,034 for the twelve Ontario and $132,000 for the four Quebec factories. Now anyone with the slightest acquaintance with the cordage and twine trades of Canada, knows that these figures are as wide of the truth as the Boer returns of killed and wounded in the Transvaal war. But even if they were not grossly inaccurate, these figures would be mere estimates, and would convey little meaning to the enquirer. What would be of undoubted value would be a statement of the number of spindles in each factory, the binder twine factories being separately classified, and from the simple statement of the capacity of a factory, the seeker for information could easily make a much closer calculation of its output than could be got by random or misleading estimates of the money value of its products. This one simple item, the only one by which the capacity of a binder twine factory can be got at—is not to be found, and it is the only one by which a check can be made on the wild and misleading statements of "annual values." There are at the present time, according to the Canadian Textile Directory, ten binder twine factories, including the prison establishments, and they have in all about 1,100 spindles, with a spinning capacity of about 15,000 tons per year. These few facts, accompanied by a note giving the price of raw hemp and sisal, with the market price of binder

twine, would give more information than columns of worthless figures made up on half a dozen different plans of calculation.

According to the census of 1891, there was only one felt factory in Canada; but the Canadian Textile Directory of 1892 gave particulars of twelve. The census of 1891 stated that there was one linen factory in Canada, this being located at St. Hyacinthe. Now the only two linen factories that ever existed in Canada went out of business at the close of the American civil war. It might be charitably supposed that the "linen factory" was a flax scutching mill, but if we turn to the heading of "Scutching Mills," in the census returns of 1891, we find a total of ten mills, of which five are in Ontario and three in Quebec. The Canadian Textile Directory of 1892 gave the names and addresses of forty-five flax mills in Ontario alone. To make the census returns more confusing, we find under another heading, "Flax Mills," of which a total of forty is given, thirty-nine of them being in Ontario. Since there are scutching machines in cotton mills and other textile mills, and since there are three separate headings, under any one of which the flax business might be put, of what use can these census figures be to anyone seeking light on the Canadian flax industry by itself?

Take another sample; the 1891 census makes it appear that there are fifteen "rubber factories" in Canada, and three "rubber goods" factories. What is the distinction drawn between these two industries? The first list is ridiculous as to number, and if it is claimed that the second list is the list of actual factories, it is equally misleading, for the total annual output of the three factories was put down at $58,280.

When we come to the woolen department of the textile trades, the census returns are still more grotesque, but as we propose to give some statistics of this department, on our own account, we shall take the subject up in another number. In making these criticisms our only desire is to make the future returns of some use to the trade and the general public, and in order to render them of value, a great change will have to be made in the work of the collectors for 1901. It is simply a waste of money to collect statistics which show nothing to those in the trade and which completely misguide the general public.

SOUTH AFRICA. ITS PEOPLE AND TRADE.

CAUSES OF THE BOER WAR.

ARTICLE III.

To give an idea of all that has been suffered by the Uitlander population of the Transvaal would be impossible in so brief a sketch as this, but a few of the grievances may be stated. First stands the franchise. As already mentioned, when the internal independence of the country was granted in 1881, it was, of course, believed that all white races would be treated alike, and Kruger, in the most distinct manner, promised this. The franchise was at first to be given on a property qualification or upon one year's residence; but in order to cut off those who came in after the annexation, the Volksraad (Parliament) afterwards changed this to five years, and then when time passed by and the five years' citizens looked to the time of enfranchisement, the law was again amended so that a man had to be a constant resident in the country for fourteen years. When the conditions were looked into, it was seen that even when the fourteen years should have elapsed, the Uitlander would not get his vote, because the claim had to be based on the field cornet's records, and in nine cases out of ten, there were no records of the registration. In many cases the field cornet could not read or write, and in cases where he could, there was a temptation to neglect the duty. In a majority of cases he collected the taxes without making any returns, so that the omission of the names gave no record of the fraud, thus serving the double purpose of concealing his stealings and depriving the Uitlander of his vote. But even if this were honestly carried out, the Uitlander was further discouraged by the provision that he should first have to renounce allegiance to his own country, remaining a political eunuch for these fourteen years, and then when this time expired, he would have to get the recommendation of a majority of the burghers of his district (whom he knows to be hostile), and still after that his application is liable to the veto of the President and Executive. We see the pitfalls so artfully prepared, in order that a man would certainly fall in one if he escaped another. Can it be wondered at that the High Commissioner and the British Government wanted to make sure of the details of the recent proposals made by Kruger at and since the Bloemfontein conference? As President Kruger is a great reader of the Bible, it would be curious to know what he would have to say to the franchise provisions laid down in the 47th chapter of Ezekiel, verses 21 to 23? The Montreal "Witness," in pointing out this principle of Old Testament law, remarks that "the most curious thing in Boer legislation is that they should by special enactment exclude from participation in the land and liberty they enjoy, the very people to whom they are indebted for the Scriptures they prize so highly, and who, even before the Babylonian captivity, extended to the stranger, who came among them, the benefit of the ancient ordinances. This instance, however, only goes to confirm the estimate made of the Boers by Dr. Livingstone, who described them as narrow, stupid and cruel."

The Boer Government not only excludes both Jews and Roman Catholics from the franchise, but even from working in the civil service. If it is found out that a railway, post office, or other civil servant is a Jew or Catholic, he is quietly but speedily dismissed, and

[These papers have been issued in pamphlet form, containing a glossary of Cape Dutch and Kafir words and phrases in common use. Biggar, Samuel & Co. 62 Church Street, Toronto. Forty pages. 10 cents.]

a Boer, Hollander, or German appointed to take his place. The Germans and Hollanders would, however, not be called in if it were not that very few Boers are sufficiently educated to fill these places.

By the trickery and breach of faith before described, the voting-power was kept, as before, in the hands of the Dutch burghers. As not one out of a thousand of the Boers of the rural districts had enough education to fill civic offices of responsibility, many Englishmen held public posts for a time after 1881, but one by one these were dismissed and Hollanders and Germans imported to take their places, until British subjects were almost as completely shut out from all share in the civic life of the country, as they were from political influence. One of the first fruits of this oligarchic rule was the system of plunder by concession Each session of the Volksraad brought a horde of speculators, who purchased by bribery the sole right to manufacture or sell this or that article in the Transvaal. These monopolies, or "concessions," were secured chiefly by Hollanders and Germans, and hence, we see one mainspring of the active sympathy of Hollanders and Germans in the present contest, for between the fat salaries of the imported officials, and the dividends from the operation of the monopolies, a good stream of money has been flowing into Holland and Germany for some years past. When we consider this, and the extortions of the Netherlands Zuid Afrikan Railway Co., owned and managed by a group of Hollanders, and when we consider that by every device possible, British trade is hampered and Dutch and German imports favored, we see why the cause of the Boer should be so warmly espoused in Holland and by sections of the German press, even if race affinity were not a factor in the case We may add to this the work of the Transvaal political agent in Europe, Dr. Leyds—a Dutch pocket edition of Talleyrand—who has been supplied with means to make the agency a nest of intrigue against Great Britain ever since his appointment. The Netherlands Railway Co. has practically controlled the finances and legislation of the State. It has been able to levy the outrageous freight rate, averaging 8½d., say 17 cents per ton per mile, as compared with 6 cents per ton per mile on the Cape and Natal railways, which themselves return a good dividend to their governments. Yet, when some of Kruger's own friends protested against these extortions, he said he considered this contract a matter of high policy, and would not even hear the subject discussed.

The art by which the combined Boer and Hollander legislators framed laws, which, while appearing to the outside world to be quite fair, yet could be made to work out to the particular disadvantage of the Uitlander, amounts to a positive genius. For instance, the school laws, while apparently giving a show to English children, are so worked as to school hours, etc., that in practice English children can neither get a chance to learn English or Dutch, while the school tax is so artfully fixed that the English parent, whose child is robbed of its chance of education, has to pay £7 against the Boers' £5. A law, to forcibly suppress all English private schools even, was proposed in the Volksraad, and only defeated by two votes. The school law is so beautifully arranged, in the case of Johannesburg, that the grand sum of £650 a year is spent on the children of Uitlanders, who have to pay nine-tenths of the £63,000 spent on education there. Then there is a tax of £20 recently levied on farms. Here the unsuspecting foreigner would see a tax levied on the Boer element entirely. Kruger cannot be so unfair after all. But look at it a little closer, and you will notice that farms on which the proprietor lives are exempt; look still closer and you see that it applies to farms owned by companies only. Now the Boer never buys stocks or bonds, and never goes into partnership, so you see it hits the Uitlander, who has bought up a Boer farm at five or ten times its agricultural value, on the chance of minerals being found on it. Another example of Boer "slimness": A poll-tax was recently introduced. It was to be levied on all male inhabitants, and there was no distinction or discrimination. Surely this was fair to all? Time answered the question in the same old way, when it became known that the tax of 18s. 6d. was faithfully collected from all Uitlanders, but not one Boer or Hollander has ever been made to pay. These are just a few samples of Krugerite equity.

We are familiar with the press law, by which Kruger has imprisoned and brought financial ruin on editors who have had the courage to run up against him. Of the same brand is the law giving it into the discretion of a policeman to break up a meeting, in the open air, of more than seven persons.

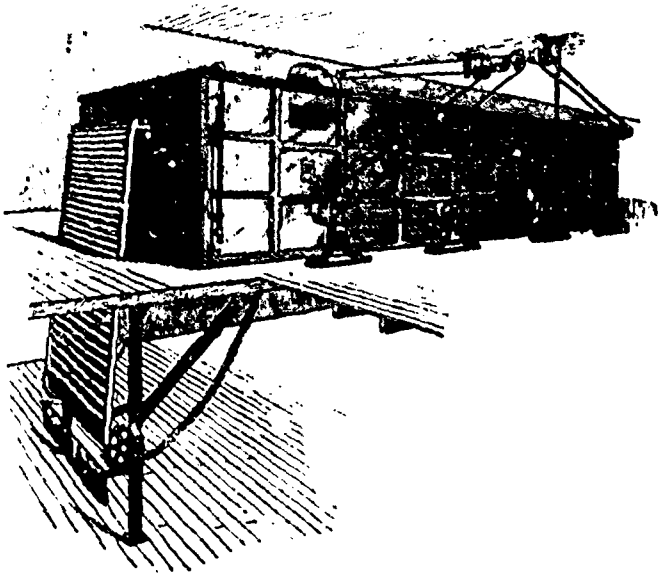
If the torture and degradation of thousands of Englishmen, Americans, Australians, and other peoples, accustomed to free institutions, were not in question, it would be amusing to those knowing the facts, to observe the injured innocence which glowed in the official despatches of the Boer Government right up to the time of the ultimatum. "If these people," said one of these despatches dealing with the petition of 40,000 Uitlanders made direct to the Queen, "instead of complaining to the British authorities had only come to this Government direct, their complaints would have had attention." What had they been doing all these years but complaining to a Government which treated their entreaties with scorn and contempt and only changed the chastisements by whips for those of scorpions? In 1893, a petition for the redress of grievances, signed by 13,000 Uitlanders, was presented to the Raad, and was received with a general laugh of derision. In 1894, another petition, praying for reforms, and signed by over 35,000 adult male inhabitants, was presented, and received more seriously, and it is due to some of

the Dutch members that they made a stand for fair play; but the only response from Kruger, who moulded the Executive at his will, was new restrictions on the Uitlander's liberty, and new burdens on his industry. When the vote was taken on this petition, one of the Boer members was heard to say: "Nothing can settle this but *fighting*, and there is only one end to the fight. Kruger and his Hollanders have taken away our independence more surely than Shepstone ever did." It is only fair to say that many members of the Raad, who might be called progressive, by comparison, saw what Kruger's policy was leading to, and urged concessions to the Uitlander element. These were supported by a slowly-growing minority of burghers, who were almost as jealous of the Hollander faction as they were of British. But Kruger had his will; and when he found occasions arising where he could not carry his point by straight legislation, he went past the Volksraad and did it illegally, as head of the Executive. On several occasions he upset the decisions of the High Court, and ended by forcing the resignation of Chief Justice Kotze, who refused to prostitute the court, and make it the tool of the Executive. A more pliant man was put in his place, and Chief Justice Kotze was deposed without a pension or other allowance or support to his old age. A sample of the direct and easy way in which the Government overrode the decisions of the courts was furnished by the Doms case, among others. A man named Doms sued the State, but while the case was pending, the Government passed a resolution declaring that Doms had no right to sue! And so Doms was thrown out of court, lost his property, and is now a cab driver in Pretoria. When the Government wished to defeat the ends of justice, even in the High Court, all it had to do was to declare itself by resolution, and it was done whether the resolution conflicted with the grondwet (constitution), or not. It is scarcely to be wondered at that the Uitlanders lost all hope of fair play when such things could be done.

(to be continued).

"HURRICANE" AUTOMATIC YARN DRYER.

In many mills it is desirable to have the dryer on an upper floor, while the dye-house and the extractors are on the ground floor. To avoid the necessity of an elevator, with its additional expense and extra labor, the Philadelphia Drying Machinery Co., 6721 Germantown avenue, Philadelphia, has arranged th's "Hurricane" dryer with the extension attachment illustrated. By this means, the yarn can be poled and fed to the machine on either the dye-house floor or the upper floor as desired. For handling yarn in quantities between 5,000 lbs. and 20,000 lbs. per day, this system is claimed to be the most economical. The yarn entering the feed end of the machine is carried through the successive drying chambers, emerging finally in a dry, cool condition. Being divided into compartments, it is possible to grade the heat independently in each, the yarn being subjected to the greatest heat as it enters the machinery, hence, it is claimed, as the yarn dries out, it becomes gradually cooler in each compartment, thus avoiding all possibility of its baking or having its quality injured. When the yarn in a cool, wet condition enters the first compartment, the rapid circulation of hot air soon generates a heavy, steamy atmosphere, but an exhaust fan, attached to the top of this compartment, draws off this saturated air and the dry air is drawn forward from the next compartment to replace the damp air which has been discharged. In this way, the damp air is discharged at the point where it is generated, sufficient being carried off to reduce the humidity to a proper working point, but as the greater part of the hot air is recirculated over and over again with just enough fresh air being admitted at the delivery end of the machine to mix with the balance and maintain a proper drying atmosphere, it is believed by the owners that the greatest amount of drying is done with the least possible consumption of steam. By inspection of the cut it will be seen that the heating coils are within the drying enclosure, but in a separate compartment at the side of the machine, instead of being on the floor of the dryer. Hence the direct heat from the pipes does not bake the yarn, the coils are accessible and easy to repair and keep clean; and the height of the machine is less than in any other automatic yarn dryer, thus enabling it to be installed in an ordinary room without expensive alterations. The framework is mortised, tenoned and joint bolted in the same manner as the "Hurricane" truck yarn dryers built by the Philadelphia Drying Machinery Co., and the machine is so arranged with doors and removable panels, that it can be quickly examined and cleaned. The poles, which are usually 9 feet long, are made of selected material, and are fitted with iron ferrules at each end. Two endless roller chains of special design, driven by sprockets at the delivery end of the machine, carry the poles, and a cone pulley worm-drive is arranged to give a variation in the speed of operating, so that the yarn can be carried through the machine at four speeds, varying from three-quarters of an hour to two hours, depending upon the character of the yarn. A clutch is also provided, so that the chain can be stopped in an instant, if desired.



AUTOMATIC YARN DRYER WITH EXTENSION ATTACHMENT.

DYEING SHODDIES.

Shoddies may be dyed either by our one-bath process which we may consider as generally known, or by a newer method which we published for the first time, say Leopold, Cassella & Co., Frankfort, Germany, in a recent publication, when we brought out our Diamine Black R M W, and which consists in first dyeing the wool in an acid bath and then covering the cotton in a second cold bath with Diamine colors and especially with Diamine Black R M W. This new method has been adopted by the shoddy industry as it permits to dye the goods in an acid bath and thus, as is frequently desired, to strip simultaneously the dark ground to a greater or lesser degree. The method resembles the ancient process (of topping with sumac and iron), but compared with the same it is claimed to have the following advantages:

The goods remain much softer and more woolly, therefore much better answering their purpose to replace all-wool goods. The duration of the dyeing process is much shorter, especially as the prolonged washing after the dyeing is not required. Therefore a greater quantity may be produced in the same time, and labor may be saved. Another advantage is, that in working with the Diamine colors the cotton may be dyed to any desired shade, whereas by topping with sumac and iron it can only be dyed a blackish gray. Furthermore it should not be overlooked, that by topping the cotton with Diamine Black R M W alone or with the other suitable Diamine colors, the goods may be dyed to lighter and brighter shades than this is possible by dyeing the same material with sumac and iron.

In the following we give the details of the dyeing method: The wool may be dyed with either acetic or sulphuric acid. Acetic acid is used, if the wool need not be stripped during the dyeing process. About 5 per cent. acetic acid is used and rinsing is not necessary. Sulphuric acid (or bisulphate of soda) is used, if simultaneously with the dyeing the dark ground of the material is to be stripped; 5 to 8 per cent. sulphuric acid or 10 to 20 per cent. bisulphate of soda are required, and after dyeing the goods are rinsed. The dyeing with the wool colors is done in the ordinary way by entering the goods in the lukewarm bath, heating to the boil, and maintaining at this temperature for one-half to three-fourths hour. The topping of the cotton may be done on a washing machine (a dolly or a broad-washing machine), on a jigger or in a padding machine. A jigger or a padding machine are preferable to a washing machine, because the baths may be kept much more concentrated and thus less dyestuff will be used. But working in the washing machine may be done just as cheaply—especially compared with the jigger—if the bath is kept for further use. As a rule only 25 per cent. of the quantities of dyestuff and 20 per cent. of the Glauber's salt required for a fresh bath, are sufficient for freshing up. If the goods contain burls, it is advisable to let them lie after the topping for six to twelve hours without rinsing, as the color covers the burls during this time. There is no danger that this might cause stains on the goods. The topping is simply done by working the goods for ½ to ¾ hour in a cold bath with the solutions of the dyestuffs and 4 lbs. of cryst. Glauber's salt and ⅛ to ¼ pint of ammonia per 10 gallons.

Diamine Black R M W is claimed by this company to rank first as a direct substitute for sumac and iron salts. It alone is sufficient when only cotton burls are to be covered, or when the cotton is entirely covered by the wool. If, however, the cotton is more prominent, then the following dyestuffs may also be used to advantage: Diamine Black B H for bluish shades, Diamine Fast Yellow A for yellowish shades, both together for greenish shades; Diamine Black B H and Diamine Orange D for olive shades, Diamine Brown M for brown shades, Diamine Bordeaux B or Diamine Rose B D for red shades, Diamine Catechine B for drabs. The last named product tinges the wool a faint yellowish brown, which fact must be considered in the acid dyeing of the wool. After the topping a light rinsing with water, either in the same bath or in a fresh one, is sufficient. Fuller's earth and other washing materials are unnecessary.

VARIOUS SYSTEMS OF COMPUTING THE COST OF MANUFACTURE.*

JAMES G. HILL, LOWELL, MASS.

The question has often been asked, is there any rule or law that governs the cost of manufacturing cloth in cotton mills? The novice naturally seeks the cost of one number of yarn by that of another already obtained but finds the result wide of the mark and very naturally seeks the reason. For instance, if he has the cost of number 20 yarn, he thinks number 25 ought to cost, say, 25 per cent. more or some certain ratio of increase, whereas the cost may be but little more and is certainly less than 25 per cent. But to conclude from this reasoning there is no law governing the costs of manufacturing cloth is misleading, because we are unwilling to admit our business has no proper methods, but, on the contrary, claim it is a science and has rules that are exact. The rule or law governing the costs of yarn is, that yarns vary as the square root of the third power. But as the manufacturer makes little or no difference for a great variety of counts in the picking, carding, drawing and first process of roving, it is obvious all counts up to and including the first process of roving will cost substantially the same, but from this point on the rule holds good in the main.

We all know that in the general run of cotton mills the speed and quantity of picking, carding and drawing is fixed at a definite quantity and only change after the first roving. Theoretically a speed and quantity that is just right for number 25s. is too much for 30s. and too small for 20s, but as so many and constant changes would be necessary if we varied our quantity with the counts the labor and trouble would doubtless be more expensive than the injury to the yarn by over production for the finer counts or the increased cost of the coarser. Moreover the liability to mistakes in changing gears and pulleys by inexperienced operatives would again be a serious objection, for all of which reasons the custom prevails of spinning all counts in ordinary plain mills, at least, from the coarse roving.

To illustrate this point, suppose we take number 22 yarn. This number of yarn will cost in New England, say, about two cents per pound to spin and in considering these costs only the mill costs proper are treated—no general expenses, repairs and cotton are included. Then if the law above mentioned should be applied to number 20s the cost would be about one and four-fifths cents per pound, whereas the actual cost would be quite considerably more or about one and nine-tenths cents per pound, and inversely if finer counts are taken, and in so far as the costs of the yarns are concerned this difference is wholly on account of the methods of manufacture. In all general rules laid down for the costs of yarns it is obvious only plain cotton mills, so called, can be considered, because in fancy weaves too many variable factors enter into the problem to permit of any uniform rule even for one such mill, much more any number. It is evident, then, that this law governing the costs of yarns cannot be applied because of our methods of manipulation, then next comes the question what method or system can be used? In all plain cotton mills the best method to adopt is to make the cost for all numbers of yarns up to the first process of roving by the pound and beyond that stage by the hank. But even this method in a mill of a large variety of counts will need a very careful scrutiny or some coarse yarns will be found to cost much below

*Read before the Cotton Manufacturers' Association

the real cost while the finer yarns may be too high, but this can be corrected by a careful revision of the numbers. To illustrate this point, I have a mill in view which found itself making yarns as coarse as 6s in the same mill spinning 30s. When the costs were first made up this very coarse yarn was ridiculously low but by using proper numbers for both warp and filling the true cost was easily found and the general method retained. It may be of interest, possibly, to note what relation the several subdivisions in the different departments bear to each other, and therefore I have made the table below showing the various classes of work with the percentages opposite each. I think such subdivisions assist in finding the true costs and also to correct any expensive departments.

Classes or Subdivisions.	Percentages.
Overseeing, etc	15.87 per cent.
Picking	1.45 per cent.
Carding	4.46 per cent.
Drawing	2.68 per cent.
Roving and spinning	18.52 per cent.
Ring cleaners	0.58 per cent.
Back boys	1.65 per cent.
Doffers	2.45 per cent.
Spooling	3.86 per cent.
Warping	1.18 per cent.
Web drawing	1.51 per cent.
Slashing	0.83 per cent.
Weaving	44.96 per cent.
	100.00 per cent.

By an expression of this table it would appear that if a mill could be built involving little or no transportation and if it was possible to make each operative do his or her full duty, quite a considerable portion of the 15.87 per cent. for general expenses could be saved, but of course all ideal mills are well enough to illustrate what might be, but as we must deal with the practical, let us resume the subject under discussion.

Next in order is the dressing department, and as the true cost varies so little from the cost if made out by the hank it is hardly worth while to complicate this method by trying to rearrange it and we may therefore deem this system sufficient. In the last process of weaving two methods may be adopted, the first, to make out the cost by the piece, yard or pound, and secondly, by the hank. If the weaving was paid by the pound as in some few mills instead of by the cut or piece, the former would be preferable, but in the latter case where the weaving is paid by the cut, the simpler method is to make the cost by the hank and thus keep one uniform system. There is much that might be said in connection with weaving, but I fear it would only complicate the subject and become so complex as to be of little value. To make a correct cost of goods it is evidently essential that yarns should be carefully weighed and accurate numbers affixed to each count, because without this accuracy the mill is deceiving itself. I knew several years ago a mill that showed the smallest cost of any mill in New England, and one of the officials remarked he didn't quite understand it, but this mill always showed the smallest cost of any mill he knew and made the least money. I lay special emphasis on this, because this mill had an inaccurate method of keeping the counts and so deceived themselves with the consequent loss of profit. There are many rules for finding the average numbers of yarns, but the formula given below I think is the most accurate, and certainly can be proved. But before giving the formula let us look into the meaning of hanks, numbers, etc. We number our yarns from one up, but what does this notation mean? We accept eight hundred and forty (840) yards as a hank or skein, and when we find one skein weighing a pound we call it number one yarn, and give numbers according to the numbers of skeins in a pound, which is a simple system of counting and very convenient, but I apprehend often leads us astray in getting our average numbers. For instance, number 20 yarn really means that one skein of that size weighs one-twentieth of a pound or three hundred and fifty grains (350) and instead of multiplying the total pounds by twenty we should multiply by three hundred and fifty (350) to get our hanks, which result is vastly different from the old method, and particularly is this noticeable in wide variations, that is where the warp and filling are very coarse and fine.

The formula is:

$$N = \frac{P + T}{\frac{P}{F} + \frac{T}{W}}$$

In this formula:

Let N equal the average number of yarn
Let W equal the average number of warp
Let F equal the average number of filling
Let T equal the threads per inch of warp
Let P equal the picks per inch of filling.

If any member is interested to work out this algebraical problem he will be surprised at the many factors eliminated. As observed above the old way of getting the average number of yarn was to multiply each description of goods by its average number, add the total hanks together and divide by the total pounds. It occurred to me many years ago that if I multiplied the several kinds by the weight of each yarn a much different result might be obtained and that proved to be the case. Later this formula was deduced from these figures. To summarize then what has been written in this paper it will show, if we have been sufficiently clear in our statement, that the six essential factors in finding the costs of cloth, are as follows, viz.:

1st. Accurate average numbers are required. 2nd. Reduce the pounds to hanks or skeins. 3rd. Divide the pay-roll of the preparatory processes by the total pounds. 4th. Divide the remaining pay-roll by the total number of hanks for a constant. 5th. Multiply the average number of each grade or description of cloth by this constant. 6th. Add three and five together for your total cost.

Too much stress cannot be laid on the importance of finding accurate average numbers of yarn, especially where many kinds of cloth are made in the same mill. In one mill I was connected with, generally spinning only one number of warp and one number of filling, the system was simple, but the moment we added another kind of cloth the cost began to vary. After considerable experience and observation I have come to the conclusion that it is impossible to get as accurate costs in a mill with a wide range of yarns as in a one count mill; but while this may be true and at times some special kind will crop out in a marked degree, on the whole this system if carefully pursued, will, for most mills with only a fair variation in numbers, give very nearly accurate costs. In conclusion I would say that originally when I selected this topic for a paper I intended to confine the subject to the mill costs proper, but later, after a second thought, concluded to briefly touch upon the remaining items of costs.

The grand total of all costs in making cotton cloth may be divided into the three general heads, viz: First. Mill costs proper. Second. General expense and repairs. Third. Cotton.

We have already discussed the first and may now proceed to the second. The same system may be pursued here as with the first. Divide the amount of general expense and repairs by the total hanks for a constant and then multiply this constant by the average number of each style of goods for the costs. Third and lastly—cotton. All mills treat this item by the pound, with this difference: some mills increase the cost of cotton by the net

waste while the more conservative increase the cost by the gross waste.

Group these three general divisions together and the final result is obtained. Finally, whatever criticism may be launched at this system of making costs, I feel sure, from long experience, that if carefully pursued no mill can go far in the wrong direction, but on the contrary will arrive at as correct a cost of its goods as possible under the varying circumstances.

Foreign Textile Centres

MANCHESTER.—The reliance by print houses upon the foreign trade for its over and profits is unfortunate in view of the strong American and German competition developed of late in certain markets. In the West Indies and contiguous portions of the American mainland the competition of the United States is yearly growing more severe. It is true that the American printer prefers big runs, and is awkward to deal with where a limited order for a special design is submitted to him. But big runs mean economical production, and the American printer, now that the protective system has, in the usual way, induced the erection of machinery in excess of the requirements of the home market, is compelled to look abroad more keenly than ever for markets. Cuba may be lost almost entirely to our printers; for it seems clear that the movement becomes stronger on the other side in favor of giving a special tariff, with preferential advantages, to American goods in Cuba.

BRADFORD.—As we are again in the midst of another series of Colonial wool sales at Coleman street, it is easy, from the reports from there of the advance since the previous sales, to verify the accounts of the upward march of prices in raw material which have appeared in this letter. The Drapers' Record hears from experts attending these sales, however, that the general condition of the wool offering at the present sales is not nearly equal to that of the wool offered at the corresponding sales last year, so that the prices to-day are in reality still higher than they appear to be in the sale reports. Although we have had such great advances in the price of the finest merino wool, holders in this market are very confident, and prices have this week been realized for some special lots which were certainly unattainable last week. Spinners have, however, as a rule covered their absolute requirements, and as they have work in hand for a few months ahead, I think we may consider that we shall not see any further serious advance in even the finest merino wool this year. It is reported from what are usually reliable quarters that some of the Continental spinners of fine merinos have oversold themselves, and also that the American spinners are getting their stocks very low, so it seems probable that both of these classes of buyers may be forced to buy shortly, whatever the prices may be. It is being repeatedly stated that, as there is a very large supply of the coarser kinds of Colonial crossbred wools, the recent sudden rise in both wool and tops of this class is not likely to be sustained; but before coming to the above conclusion it should be borne in mind that the production of the United States domestic wools of a corresponding character has decreased nearly 30 per cent., and lately this country has been acquiring unusually large quantities of these lower priced cross bred Colonial wools. The production of both English and Scotch wools which compete with lower crossbred Colonial wools is also decreasing. As has been pointed out in these letters for some time past also, there has sprung up in the last year or so a very large demand for thick counts of crossbred worsted yarns for use both in the home and Continental woolen trades, and these thick yarns consume very large weights of raw material. Even with the late rise the price of goods such as worsted serges, which are made from the cheaper kinds of crossbred yarns, is relatively extremely low when compared with those made from merino or even mixed light woolen goods. In home wools the demand for Irish wools (mainly on American account), has been the most striking feature of the market, and although prices have quickly advanced more than a penny per pound, there seems to be a strong disposition to push them still further upward. Both raw mohair and alpaca are exceedingly firm, but by far the greater part of the present year's clips are now in the hands of the consumers. Spinners of single weft yarns in mohair are very busy, both on home and Continental account, and some manufacturers here are complaining that full supplies of yarn are difficult to obtain. All classes of worsted spinners are now so busy that they do not want further orders for months to come, and prefer not to entertain any new business until they are nearer the time when they could begin to deliver. Manufacturers are now as busy as the supply of weavers will let them be, especially the makers of the better classes of plain and Jacquard mohair goods in black. I hear that a few large wholesale buyers were in this city last week trying to arrange for increased deliveries of these goods, but were unable to get much help in this way until the latter part of the spring season. The rise in fine merino wools has made itself felt very much in the best class of Italian linings, as the increased cost to-day, as compared with bottom rates, is quite a shilling per yard. In the lower and medium Italian linings I find that makes of crossbred satins are being used to supplant the pure merinos to an increasing extent. Now that we are within a month of Christmas it is always to be expected that, with the exception of evening wear, dress goods departments would find business a good deal interfered with by the bazaar and toy departments; but the long continuance of the mild weather has also had a bad effect on the sales of winter dress fabrics lately. The high prices of Colonial wool seem to be already having the effect of increasing the orders coming from Australia, and, of course, the buying power of the wool-growing colonies must be greatly increased. It seems probable that the wool-sorting industry is likely to be declared a dangerous trade, so far as regards mohair, and some Eastern wools; but the precautions taken are now so extensive that it seems impossible for anything further to be done in this way.

NOTTINGHAM.—Business still continues in a favorable condition. Employment is more plentiful, and, as a consequence, fewer men are out of work than has been the case for a long time in the lace trade. What is better, appearances at present do not point to any decrease, but rather to an increase in the demand. The war in South Africa has affected our trade with the business centres in that country, but it is more than counterbalanced by the exports to our other colonies and the United States. Silk lace manufacturers are hoping to profit by the anti-English feeling in France, and the disgust which it is engendering in England. They say that drapers should be as patriotic as conjectioners, and refuse to sell French goods, in which case silk laces of home manufacture would have a better show than for some time past.

KIDDERMINSTER.—Carpet orders continue to come in satisfactorily, and all machinery is well occupied, says The Textile Mercury. But the difficulty of making carpet at the present list price is increasing, and if the general advance in materials is merely established, and does not go further, the present prices of carpet will be losing ones. Spinners are fully busy, and though less business has been done lately, prices of local yarns are again firmer. There is no pressure to sell, except at further advances, but for the time manufacturers are hardly inclined to pay more than they already have done.

LEEDS.—No description of cloth is less than 5 per cent. above the prices of a week ago, and the mills are working at

high pressure. The prevalence of mild weather favors the buyers of reversibles, beavers, presidents, and best meltons. The shipping trade is fairly active for worsteds, vicunas and tweeds There is a scarcity of labor in the ready-made trade, and two large factories are in course of erection. Australian consignments of clothing continue large, with money and orders both plentiful, and the bespoke trade is rapidly expanding. A special make of blankets for hospital, field, and ambulance work is in urgent request by the Government, and there are peremptory orders for very rapid delivery. Army cloths are in liberal demand, and the production is large. Mungoes and similar material sell rapidly, and some kinds are scarce and dear. The quotations of wool yarns are unsettled, but cotton warps are decidedly firmer.

Huddersfield.—In Huddersfield the greatest activity is still evident in all departments of the woolen and worsted coating manufacture, and travellers report that now the retail part of the trade appear to be arriving at the conclusion that the payment of very considerable advances in prices is inevitable.

Belfast.—The healthy tone that has characterized the linen market for some time past has been fully maintained. There is a steady and satisfactory—in some cases an active—demand, and prices continue to move in an upward direction. Yarns are selling steadily, the new business entered being about equal to the production. Spinners are so well supplied with orders that they are not pressing for business, but the reverse. The coarser numbers of line and tow wefts have slightly advanced in price. The demand for brown cloth continues active, and the turnover is fully up to that of recent weeks. Power-loom linens for bleaching are selling satisfactorily. A steady business is passing in cloth for dyeing and hollands. Unions are in brisk request, and the demand for damasks and housekeeping goods is growing. The shirting trades are busy, and handkerchiefs—linen, union and cotton—meet with a ready sale. Hand-loom linens for bleaching sell freely. The tendency of prices all over is still upward, and prospects for the future are bright, both as regards quantities and values, says The Drapers' Record. Bleached and finished goods are in gradually improving demand. The home markets are sending in a fairly good supply of substantial orders, and prices are very firm. There will probably be the usual falling-off in demand towards Christmas and the stocktaking at the end of the year. For household linens, damasks, towellings, etc., there is a fairly steady sale. Business with the United States continues to improve, and as stocks on the other side are said to be low, there is a good prospect of the improvement being maintained. With foreign West Indies trade is flat. On the termination of the war shipments to Cuba began to go up by leaps and bounds, and the market now appears to be congested, and the course of business hard to determine. Probably it will recover its tone in the course of a few weeks, and regular trade begin once more. There is a slight improvement in the South American demand, principally from the Argentine. Shipments to Canada are steadily good, and growing, and there is a very fair demand from Australasia. Orders from the Continent are of a good average character, with the prospect of an improvement.

Lyons.—The silk goods market in Lyons continued active and spring orders, which had been delayed, were so placed that plenty of work is now secured for the looms, and even the hand looms can be taken care of. Buyers are in the market, and this has all the animation that distinguishes it when the industry is prosperous. The leaders are printed goods and piece-dyed fabrics. Black and colored taffetas are in demand. Satin duchesse, crystalline, surah, pongee, etc., are selling. The demand is also good for plain armures, rhadames, radzimir and peau de soie. Crepe lisse and crepe de Chine in 48-inch widths continue to find buyers. Muslin, plain and broche, and fancy gauze also sell. There is a fair demand for surah and satin Oriental for the English market. Spring orders have been placed for the American market for light, soft finished tissues and for printed silks. Lining silks are in demand. Sashes in stripe and printed combinations have been ordered. Printed taffetas have been ordered for upholstery purposes. In umbrella silks the good orders that had been previously placed will keep the looms going for some time. In woven fancies orders have not been of liberal proportion and the number of looms that are kept busy in them is not very large, but some orders for damasks and broche effects on taffeta grounds are under execution. Embroidered, soutache and fringe effects are liked, good orders having been booked for these and passementerie workers have plenty to do. The demand for velvet continues satisfactory and plain velvets sell well, the favorite shades being pastel, light rose and light marine, in which good lots have been purchased. There is a good demand for America for plain and printed panne. Fancy effects in combination of velvet with gauze or muslin have found a fair market. The situation in ribbons is unchanged, with a fair demand for export.

Crefeld.—The demand for silks for fall consumption has fallen off, retailers buying only for strict requirements, and the season may be considered closed. All attention is now being devoted to spring goods, and as buyers had delayed as much as possible the placing of spring orders on account of the prices, they have now little time to lose. A feature in the situation is the greater use which chappe is finding in the production of silk fabrics, and which is due to the high prices now prevailing for raw silk. Not only for printed goods is chappe used in combination with the dearer silk, and would have been employed even if prices of the latter had not advanced. Chappe is being introduced by manufacturers into every tissue in which its use is possible, and in this way manufacturers are doing their best to keep the cost of production of tissues down. A fair business for spring has already been done. Taffeta seems to be no longer a first favorite, but it is so difficult to find a substitute for it that the taffeta weave is very much seen in the spring collections, while soft tissues like surah and merveilleux do not seem to meet with much success. Other tissues that seem to be liked are crystals, epingle, gros de Londres, etc. In figured goods, damasses are liked and have been ordered in various designs and combinations in black and colors. Moire velour is still mentioned, but while it is expected to sell there does not seem to be much of a possibility of its becoming a leader again The orders recently placed secure better employment for the looms. In linings the looms have good work on hand, orders having been placed for stripes and checks in all-silk linings, while in half silk linings stripes have also received attention. In cloaking silks damasses, brocades and matelasses have been ordered In tie silks the looms, while not being rushed, have a fair amount of work on hand, while in umbrella silks production continues active. In velvets the demand for plain goods is satisfactory, while fancies are slower.

Milan.—There is an active demand for raw silk, and notwithstanding the higher prices demanded good transactions have resulted and more business would have been done had sellers been disposed to enter into heavier engagements. The demand has been diversified and nearly all sorts have participated in the transactions. A good business has been done for America, for which market a few large contracts have been made. In thrown silks the demand has also improved. Prices have advanced and 60 lire per kilo is the ruling quotation for classical raw, while extra classical is quoted 62 lire. The tendency is toward higher prices In cocoons there has also been greater activity and higher prices, 14 to 14¼ lire being now asked. The Turin market has also been more active, with prices gradually moving upward.

CHEMNITZ.—Orders are still coming by every mail, and almost any price is paid to get the goods at an early date, so that this delays the delivery of the orders placed some time ago, as the factors bring in the goods ordered at high prices to make sure of the extra profit, and neglect those for which they get less money. This fact frequently makes it unpleasant for the Chemnitz exporting houses, says the correspondent of the Dry Goods Economist, New York, as in many instances it is impossible for them to ship the goods at the date specified. The style of goods asked for has not varied to any great degree. Lace hosiery is still picked up as eagerly as ever, and embroidered and printed styles are finding ready takers. Mercerized goods are selling well, and the demand for these is growing steadily. Fabric gloves are selling well, and nearly all orders are on button gloves, other styles not being much in demand.

ZURICH.—The silk goods market is not as active as it could be and fall demand has not given great satisfaction. London is buying little, and while Paris has ordered fairly it has not been as good as expected, especially in view of next year's exposition. But for the American market business has been good and the trade done with New York has been satisfactory, writes the New York Dry Goods Economist's correspondent. The business done for spring has not been heavy. Some orders for novelties have been received from Paris. London can only be reached through very low prices, such as manufacturers cannot take into consideration, and offers made by London buyers have been rejected on this account. The raw silk market is firm and prices are 1 and 2 francs per kilo higher. Some business has been done here in Japan silk, the demand for which has been fair, but prices here have not yet advanced to the level that is ruling in Yokohama Italian silk is very firm and higher, but the local demand has been small.

NEW DYESTUFFS.

Diamond Black F R is a late addition to the already large family of Diamond Black dyestuffs. It closely resembles the well-known F quality, but is somewhat more violet in tone and brighter. It is especially suitable for dyeing loose wool, slubbing, yarns, piece goods, etc. It is unnecessary to again draw attention to the extreme fastness of Diamond Blacks to milling, carbonization, steaming, etc., as well as the excellent fastness to wear and light, as they are now so very well known. In price, this brand is slightly lower.

Alizarine Heliotrope R and 2 B, patented, are new Alizarine heliotropes, which are clear, bright colors; the latter being considerably bluer. Especially adapted for light shades and discharge printing.

Alizarine Sapphirole S E, patented.—The Alizarine Sapphirole colors possess clear, bright shades, especially suitable for mode shades on ladies' dress material. Alizarine Sapphirole S E is the latest brand, and is somewhat redder than the B brand. Both are very fast to light, perspiration, etc., and combine well with other Alizarines to produce very fast fancy shades.

Pluto Black B S—A valuable addition to the growing list of direct blacks is a homogeneous dyestuff of high concentration and less cost A deep black of bluish tone can be produced on cotton yarn as well as on loose cotton with about 3 per cent in a standing bath or 4 to 5 per cent. in the first bath, which in fullness and depth of shade cannot be equalled by any substantive black on the market Dyes both fibers intense and to the same shade in a boiling bath, with Glauber Salts. In fastness to washing and light and easy solubility, it meets all ordinary requirements

Acid Anthracene Brown R. Powder.—A new important acid wool dyestuff, a substitute for Anthracene Brown, to which it is far superior in all its properties. Acid Anthracene Brown R is especially adapted for the one bath process, and dyes with addition of acetic acid and a small amount of sulphuric at the finish, or with sulphuric acid alone, and produces a clear brown of moderate fastness to light. By an after treatment with bichromate of potash, the shade is changed into a chestnut brown, which has a number of valuable properties. Fastness to light, not surpassed by any existing dyestuff on the market. Fastness to milling is excellent and stands even a severe test. Fastness to alkalies, carbonization and acid is also very good. Fastness to rubbing about the same as Anthracene Brown. This color dyes slowly and falls on the fiber exceedingly level.

Azo Acid Blue 6 B and Victoria Violet 4 B S—Are two excellent acid colors, which were brought out a short time ago by the Farbenfabriken and are described in a recent pattern card. and some good shades are shown dyed; combinations of Fast Green Bluish Azo Crimson S, Orange 2 B, Fast Yellow extra, Azo Acid Blue 6 B and Victoria Violet 4 B S.

Wool Blue N, Extra—This new and interesting product possesses some valuable properties, is of an extremely clear, bright shade, and has good level dyeing properties; excellent fastness to light and alkalies. Wool Blue N extra is specially suited for brilliant, pure blue shades, as well as for fashion shades on ladies' dress material, and in combination with the well-known Acid Violet 4 B extra or 3 B extra produces a very bright navy blue, which is unaltered by artificial light. This color exhausts well; dyes with Glauber Salt and sulphuric acid, or in a neutral bath with Glauber Salts alone; gives excellent results, and is recommended for the production of bright shades on dark shoddy. Other noteworthy properties are its great affinity for the wool fiber, and fastness to stoving, also productiveness and low price.

Chloramine Yellow 2 G.—A benzidine dyestuff, belonging to the chloramine branch, which is already recognized by fastness to alkalies, acids and chlorine. Dissolves easily and dyes level, and is adapted for loose cotton yarns, hosiery, piece goods, etc. The former brand will now be known as Chloramine Yellow M, to distinguish it from this new product.

Brilliant Azurine R and 5 R—The above are two new substantive blue direct dyeing colors, which produce full heavy blue shades of considerable brightness. Other properties such as fastness to light, acids and alkalies are similar to those of Benzo Blue. When diazotized and developed with developer "A," produce very fast shades resembling Diazo Blue 3 R. When after treated with copper the fastness to light and washing is still more increased. Also adapted for half wool and half silk, the 2 R brand especially.

Shade cards, circulars, dyed skeins and color samples of the above dyestuffs will be mailed to those interested on receipt of address by the Dominion Dyewood & Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken, vorm. Friedr Bayer & Co., Elberfeld, Germany.

SELECTION OF FINE WOOLS.*

One reason why the old-fashioned expert handling of wools has disappeared apparently, or at least has become obsolescent, is this. Combing machinery has been very largely changed in the last twenty or thirty years; and wools that at one time were conscientiously refused as being not fit for the handling of the machinery of that day are worked to advantage to-day by the improved machinery. That makes a difference; so that to-day we do very little, and so far as I know there is very little done anywhere in the world, of this individual selection of every fleece; after the people who, in the warehouses and on the

*From an address of H. Harding before Warp and Weft Club, at Philadelphia Textile Schools.

ranches and in Australian stations and elsewhere, have charge of the grading at these points have put their seal on the quality and character of fleeces, very little change is made. Wools are bought, in other words, very largely "as it is." When the buyer, grader, or whoever passes this final judgment on the wool is through with it, in his mind there is a rough estimate as to what the people on the Continent call the yield of the wool; the American habit has been to talk about the shrinkage of the wool. It is more scientific, and in the end, after one gets used to it, it is easier to think straight out, what will be the yield of the wool? Or, as the French and the Belgians call it, the "rendement." The buyer has been making up his mind as to how many scoured pounds he is going to get out of the pile handled or bought, and his importance to the mill and his success for himself are going to depend very largely upon the accuracy of his judgment, particularly in fine wools, on this question. Of course if the wool is not fine, or it is a wool that shrinks only 18 to 25 per cent., his chances for variation are not so great as when the wool will shrink 50, 55, 67, 72 per cent., or as high as, say 80 per cent. When it gets in that shape it is a very serious question as to how accurate his estimate is for the yield of the wool.

One of the first things that he wants to have carefully estimated, while he is doing that, is the difference between the value of the fleeces as he buys them and the absolute value of the part of the wool that he is going to scour. The older ones of us who have been in the business remember that for years and years it has been the habit in this country for a salesman to pull out of his pocket a nicely bound book and tell you how much any wool will shrink. His book had the price at the top, the shrinkage at the side and the result in the angle, ignoring absolutely the fact that when you bought the wool it was not ready to scour, and that out of every one of these fleeces—more largely out of the domestic than out of the foreign—a certain number of pounds of wool and other material was to be laid away and would never see the scouring tub in the main sort that you were buying; and every cent that is lost on this material that is laid aside has to be accounted for as an additional value of the main sort, or else accounted for in the profit and loss account of the mill at the end of the year. In one of these places it is bound to turn up; and the man who is making up his mind as to what he is going to get in the way of cost of his scoured wool is very short-sighted for his mill, and he is taking a very great risk with his own success and reputation, if he does not fall into the habit very soon of figuring very nearly, not merely how many pounds are to come out of the hundred as scoured, but what change in the price is to be made by the loss on its deteriorated qualities, which must be added to the main quality and then figured. Let me take an example. This morning I was talking with a wool dealer, who knows all about this matter, on the value of fine wools, and we took this rough estimate: If fine wools to-day are to be bought at 30 cents—domestic washed wools—and they yield 45 per cent., your scoured pound would cost you 66 2-3 cents. But it does not go into the scouring tub at 30 cents a pound. A varying number of pounds comes out of every hundred pounds that don't begin to be worth 30 cents; if the fleece is tied up with big strings, they sell at half a cent a pound, and there will be a lot of rubbish that you will get out of a thousand pounds that is not worth anything at all. Then, there will be parts of the fleece which the sheep honestly carried with him as long as he could, that is worth very little; the neighbors of these questionable parts of the fleece are stained locks and curly locks, and locks wherein the fibers are thick at one end and thin at the other, and are round in one place and flat in another, and short or tender; and many sorts of imperfections may be found in various parts of the fleece; and for your straight business with fine quality, making the best class of fine goods, these things must go some place else and not to your scouring bowl. When you buy a hundred thousand pounds of fine fleece wool and have no idea how much of this stuff is coming out—if you say "I will buy a hundred thousand pounds at 30 cents, and it is going to yield 45 per cent., and the cost is 62 2-3 cents clean"—somebody will be hurt. My friend and I put it another way. We said, "Suppose the deteriorated portions taken out raise the price to 31 cents (which is sure as can be) to-day, and possibly to 31½, and then the yield is 45 into 31 or 31½"—you see it makes the clean cost really 69 or 70 cents."

There is no other way in which the wool buyer can be trusted to buy wool for his mill, than to see that all the dollars that he spends for the hundreds of thousands of pounds of wool are put on the various qualities at prices that leave them ready for scouring. You may do your very best with pricing the different qualities that are used and the market for the yarn or the market for the goods may be against you on some, and in your favor on others, yet, there is no other safe way to handle the fine wool account, no way at all that can be trusted, than that of exhausting the whole cost of wool on the qualities when ready for the washing tub. When the man who is selecting—buying—the fine wool is all the time responsible for the cost of his wool ready to wash, you see he ought to decide very closely this question of what is the scoured cost of his wool, or what is his yield. There are some men who have a natural gift—I don't know what else to call it—for estimating the shrinkage of wool. Of course it is not to be trusted without education; but there are men who have not the gift, and you cannot give them judgment with the education. Now, whether the man who is buying and selecting fine wools has, or has not that gift, of course makes a very great deal of difference with his final success; if he has that genius and is cultivated by education and practice, there is no salary that is paid good wool buyers in this country or anywhere in the world that is not a cheap price for a man of that kind in handling fine wools. The places are open and always will be. Young men who have the qualifications for determining the value and fineness of wools, for combing purposes particularly, can find places for themselves in the world yet; and there never will be a time when there will not be, in this country at least, a strong demand for men who have carefully educated themselves to determine the scoured cost of fine wools for special combing purposes. There never will be a machine that will take their places. It requires special instruction and the utmost perseverance; it is going to require some time; it is going to require a scientific knowledge of the hygroscopic quality of fine wool—of all wool—to which very little consideration has ever been given in this country.

Belgium, since 1860, has been buying and selling its woolen goods by weight fixed, for moisture contained, by law. This country is getting awake within the last two years to this affinity of wool for moisture, which plays an important part in the profit and loss account of people who work fine wool.

I have been talking about the scoured cost of wool as if it were a fixed quantity. It is not. It is possibly the most variable thing under the sun except the thermometer; you may scour a lot of wool and weigh it every day in the year after you have scoured it, and it will vary every day. Millions of pounds of wool and of woolen products are bought and sold in this country, and they contain a constantly varying amount of moisture on account of this hygroscopic quality of wool

Wool will take in, as you know, a certain amount of moisture; you cannot make that amount of moisture fixed You are at the mercy of varying circumstances. The time is coming when the United States must make a law fixing legal limits for moisture England, in 1887, woke up to the fact that she was losing trade because she was not determining a fixed weight for all woolen products. Belgium and France were doing it. England

was not, and England was constantly suffering from a discrimination on the part of buyers of yarns, on the part of buyers of tops, on the Continent. A Royal Commission, reporting, I think, in 1886, recommended that England should follow in the wake of the Continent, and should find some true method of determining the actual weight of woolen fabrics. A Bradford corporation in 1887 established a conditioning house for various purposes, among others to determine the true weight and condition of wools, and Bradford has continued it ever since. You know, it makes a great difference to the product of your mill if you buy wool containing a certain amount of moisture, and put it through your machinery, and then, by delivering your products hot out of the mill room, lose 5 per cent. of the weight that you paid for in scoured pounds. It is going to hurt your profit and loss account very seriously. In this country we have had the rough method of taking say five sample bags of fine wool, and having them scoured by a reputable scourer to find the yield. On hearing the report, the dealer usually wanted to know immediately, "Were they dried red-hot?" You see what this means: The shrinkage might be increased anywhere from 3 to 7 per cent. by the hot drying, and it had a good deal to do with the resulting bargain. But even to-day, all that we attempt in this country is to have sample bags of the material scoured by two or three reputable scourers. They are all honest, and they all warrant the correctness of their scouring. You may keep right on attacking the whole quantity—five bags at a time—sending it to your three mills, and having it come back the next day, and you will never get the results alike, because the conditions have not been alike. Wool will take up moisture, according to the varying conditions, and the conditions are varying every day in these different mills. We may go right on with that method of scouring sample bags; the dealer may have constant disputes with his customer; and the dealer, scourer and customer may be honest, and the true weight of the wool still be an uncertain quantity. What are we going to do? The Continent has settled it by determining by law that the scoured wool, when it is made absolutely dry, may regain a certain fixed percentage of moisture; and if it does not regain that much, the seller shall claim the difference and insist on selling the absolutely dry weight plus a fixed legal percentage of moisture; and if it regains more than that, the buyer may claim the difference, and pay only for absolute dryness plus the fixed legal percentage, and that is right. The only question is, what shall be the absolute percentage that shall be added? I am not going into the figures, but I am happy to bring this subject before you, because all of you are likely to live to see the day when the question will come up in this country as to fixing, by Federal law, a standard as to the true weight of woolen products. But let me illustrate. Top: combed without oil, on the Continent, are sold and bought under the legal enactment that if they are made absolutely dry by a public professional "conditioner," they shall be sold for absolutely dry weight, plus 18¼ per cent., and, if 18¼ per cent. of water has not come back to the dry weight, you will pay for it all the same on the theory, if it is not there yet, it will get there. If, however, more than 18¼ per cent. over dry weight is in the tops, the professional conditioner fixes the bill, and you pay for absolute dryness and 18¼ per cent. added.

Our firm has been working on this, and keeping a little private conditioning house, since 1884. At that time I had had a dispute with buyers of wool abroad on the basis of the proposition that while it may be true on that side of the water that the average regain of combed tops—combed without oil—will be probably 18¼ per cent., the climate of the United States is, on the average, so much dryer that the normal regain will not be 18¼ per cent., and never can be; and if your wools were bought in London or Australia on the theory that you will comb them into tops, and they will come back to this weight, you will be mistaken by a margin of 2 per cent., because of the greater dryness of the American climate compared with that of England.

LONDON WOOL SALES.

The last of the series of wool auction sales in London for 1899, opened Nov. 28th, the salesrooms being crowded. The offerings for the series were unusually small—only 106,000 bales. Throughout the day the bidding was spirited, the competition being chiefly between English and continental buyers. Merinos and fine crossbreds advanced 15 per cent. above the prices obtained at the last series and coarse crossbreds 20 per cent., the latter showing a larger increase, due largely to the fact that the low grades have not been on a level proportionate with the fine grades. The following are the details of the first day's sales: New South Wales, 2,500 bales; scoured, 10d. to 2s. 5d. Queensland, 2,700 bales; scoured, 1s. 8d. to 2s. 4½d.; greasy, 1s. 1d. to 1s 3d. Victoria, 700 bales; scoured, 11½d. to 2s. 7½d.; greasy, 7½d. to 10d. South Australia, 1,200 bales; scoured, 2s. 1½d.; greasy, 8d. to 1s. 2½d. West Australia, 400 bales; scoured, 1s. 6½d. to 1s. 10d.; greasy, 9½d. to 1s. 1d. New Zealand, 2,900 bales; scoured, 6d. to 2s. 1d.; greasy, 6¾d. to 1s. 1½d. Cap. of Good Hope and Natal, 600 bales; scoured, 1s. 2d. to 2s. 5d.; greasy, 9½d. to 1s. 0½d.

Prices were strong throughout the series, and a number of advances took place. The sixth series of the 1899 wool auction sales closed Dec. 11th, with a large attendance of buyers present. The offerings numbered 8,312 bales, and included a good selection of merinos, the Germans securing the bulk. The home trade absorbed crossbreds, and American buyers were active for coarse grades, and also secured the majority of Buenos Ayres. The general tone to the sale was strong. During the series 103,000 bales were sold, of which 50,000 went to the home trade, 49,000 to the Continental trade, and 4,000 to American buyers. There were 4,000 bales carried over. The prices realized during the series showed an average advance of 15 per cent. on scoured to 10 per cent. on fine greasy merinos, 20 per cent. on medium coarse, 25 per cent. on slipes, 15 per cent. on inferior qualities, and poor scoured 10 per cent. advance over the last series. Cape of Good Hope and Natal stock showed an improvement of 12½ per cent. The first series of 1900 is scheduled to open on January 16. Following is the sale in detail: New South Wales, 1,900 bales; scoured, 1s. 1d. to 2s. 6½d.; greasy, 11d. to 1s. 4d. Queensland, 2,000 bales; scoured, 1s. 3d. to 2s. 6½d.; greasy, 11d to 1s. 3d. Victoria, 1,100 bales; scoured, 1s. 2d. to 2s. 2d.; greasy, 5¾d. to 1s. 4½d. New Zealand, 2,700 bales; scoured, 7d. to 2s.; greasy, 5½d. to 1s. 2d. Cape of Good Hope and Natal, 200 bales; scoured, 1s. 1½d. to 2s. 3½d.; greasy, 11d. to 11½d. Buenos Ayres, 300 bales; greasy, 6¾d. to 1s.

ONTARIO FACTORY INSPECTION REPORTS.

The eleventh annual report of the inspector of factories for the province of Ontario has been published. Robert Barber, the inspector for the western part of the province, reports that during the year just ended it has been his experience to find a very marked increase in the activity in manufacturing in nearly all branches of business. The applications for legal overtime permits of twelve and one-half hours a week, over and above the sixty hours allowed by law, for females, have been more numerous than heretofore; and in a few factories where the legal overtime was not sufficient to fill orders in time for delivery, two sets of workers were engaged to work night and day—20 hours out of 24. Considerable advancement has been made in the ventilation of factories. Mr. Barber found very few complaints, and found all kinds of factories becoming cleaner every y ar.

Mr. Barber in his report says: Of the 110 accidents reported since the last report was issued, 31 of them happened in the

wood-working industries; of these 18 happened by saws, mostly rip-saws; 1 by a boring machine; 3 by jointers; 5 by buzz-planers; 1 occurred by a person falling across a circular saw; 1 by falling on a buzz-planer. Twenty-six accidents occurred in metal industries. There were 11 fatal accidents.

James R. Brown, the inspector for the central district, says that complaints have been made about children under 14 years of age being employed in factories, and warns employers. Complaints have been made that the limit of sixty hours has been exceeded in some cases, which, on investigation, have been remedied, and in one case there was a prosecution for the violation of the Act. The number of accidents reported and ascertained as having occurred during the year are 81, four of which were fatal. Of the whole number 18 were caused by circular saws, one of which was fatal.

The report for eastern Ontario was made by A. O. Rocque. He reports the factories in excellent condition and very active. Fire escapes had been placed in all the factories. "While it has been a pleasure to me to notice the decrease of accidents and the increased protection to machinery, I have observed other evils which are not so easily remedied, viz., danger to the moral and physical as well as intellectual development of the young by being confined and permanently employed in factories for sixty hours every week."

Miss Margaret Carlyle, the female inspector, reports great advancement. She said the law regarding employment of children had been well complied with. She objected strongly to the contract clothing system. Miss Carlyle says regarding the law requiring that employers of females shall provide seats for their use: "I have given a good deal of attention to this matter, and find very few mercantile establishments violating this section of the law. I notified the firms, and they immediately complied with the law; whether the employees are allowed to use their seats is another question." There are some valuable papers in the report regarding explosions.

HIGHER PRICES IN COTTONS.

With raw cotton prices at present figures, and considering that the present boom actually has some basis in shortage, there is every probability that present prices in manufactured goods are not permanent, in spite of recent advances, and higher prices may be looked for. The beginning of the month saw a rise in Magog print prices on five lines. At the end of November the Dominion Cotton Mills Company advanced almost all lines from five to ten per cent.

ELI WHITNEY AND HIS COTTON GIN.*

M. F. FOSTER, MILLFORD, N. H.

Foremost among inventors stands the name of Eli Whitney, the avowed inventor of the cotton gin. His invention has withstood the criticisms of practical manufacturers and theorists for more than a century, and it can be said that to-day it practically prepares the cotton crop for market, and it bids fair to be continued in use for considerable time to come unless some inventive genius can bring out something to take its place which will perform the work as speedily and cheaply, and retain the staple unbroken. The manufacturer may grumble and declare that the saw gin is the most destructive process that cotton is subjected to from the cotton field to the spinning frame, yet he is compelled to accept the situation from the fact that no inventor has brought out any other process of separating the lint from the seed that finds favor with the cotton grower, for he seems to be the man to please as it is his business to raise the crop, market the same and get his pay for it.

*From a paper read before the Cotton Manufacturers' Association at the Montreal meeting.

Eli Whitney foresaw what was wanted in his day and went to work and produced it. We say he "built wisely" or that he "built better than he knew" for the test of a hundred years shows him to be an inventor worthy of appreciation. Born and educated in New England, he carried with him to Georgia that spirit of enterprise that has distinguished him among men of genius. During the past winter the writer visited the spot where Whitney made his experiments with his cotton gin. Upon a sluggish stream that is known as Double Branches which flows into the Savannah River a few miles below Augusta, Ga., stands a deserted wooden mill building with its crumbling wooden tub wheel in a decayed wheel pit. Near by is a broken dam and a cane brake which borders upon a swamp where the long flowing moss hangs drooping from the trees. The spot is uninteresting only as a place where Whitney made experiments and operated his first cotton gin. Upon this spot the cotton growers and the manufacturers should alike join in erecting a tablet to the memory of Eli Whitney. Only for the invention of the cotton gin has cotton manufacturing assumed the vast proportions that it has throughout the world. For the following bit of history I am indebted to Charles C. Jones, LL.D., author of the "History of Georgia" and other historical works.

Eli Whitney was born in Westborough, Mass., Dec. 8, 1765, and after completing his education at Yale came to Georgia with the view of entering into the legal profession. He made his home with the widow of General Green, the Revolutionary hero, and as tradition has it, had his attention directed by that lady to the subject of a machine for preparing cotton for the market. In those times the seed was laboriously and imperfectly separated from the lint by hand, and Mrs. Green seems to have foreseen that important results would follow a speedier process. Young Whitney worked out the idea and in 1793 received a patent for his famous gin. His experiments were made in and near Augusta, Ga., and about four miles north of the city is still to be seen the dam used by him to run his works. Sometimes it is said that Whitney is not the real inventor of this device, but purloined the idea from its original author. The statement being that a citizen of South Carolina constructed a gin towards the close of the eighteenth century, and that Whitney surreptitiously gained access to his workshop and carried off the plan, and constructing a machine, pateated it as his own. This story is told with great circumstantiality, and the house in which the machine was originally constructed is said to be still standing within sight of Augusta in Hamburg, S.C., on the left hand side of the road, just across the Savannah River bridge. The contemporaneous history of Whitney's times, however, shows pretty clearly that he was really the inventor. The patent was issued to him in 1793, and by Act of Dec. 19, 1801 (5 statutes South Carolina, page 424), the Legislature of South Carolina purchased from him the right to use his patent in that State for the sum of $50,000. The Augusta, Ga., Herald, of Dec. 30, 1801, mentions the passage of this Act, and says, "In the course of the negotiations between the Legislature of South Carolina and the patentee we understand that every satisfactory evidence of the originality of the invention was produced, and its principles so fully explained by the ingenious inventor that little or no diversity of opinion existed as to the propriety of making a contract." Now if Whitney had really robbed a citizen of South Carolina of the invention it is hardly likely that the legislature of that very State would but eight years after have permitted him as against one of its own people to profit by the wrong. If any question was raised before the legislature of South Carolina as to Whitney's right every satisfactory evidence of the originality of the invention was produced so that there was little or no diversity of opinion as to the propriety of making the contract.

Whitney's right to the invention was further established by

Act of the legislature of Tennessee in 1806 by the passage of the following resolution "Whereas it has been made to appear to the satisfaction of the general assembly that Eli Whitney, from whom this State purchased the patent right to a machine for cleaning cotton commonly called the saw gin, is the true inventor of said machine, etc" We draw a veil over the imperfections of the saw gin, and as cheerfully as the conditions justify accept the multilated staple, and rejoice that we have even that to be thankful for. But new times demand new measures, and every cotton manufacturer will hail with delight the introduction of a machine which will overcome the objectionable features of the present system of ginning cotton. The manufacturer should continue to urge upon the producer the importance of improved methods of preparing cotton for the market. Every effort made in that direction has its influence, and in time will bring about the required results.

THE CANADIAN TEXTILE DIRECTORY.

The fourth edition of the Canadian Textile Directory is out It gives a list of the manufacturers and dealers in textiles, and of tanners and curriers throughout Canada, statistics of the imports of textiles into Canada, the tariff items of Canada, Newfoundland and the United States, affecting textile manufacturers and dealers Montreal and Toronto: Biggar, Samuel & Co. - The Montreal Gazette.

The fourth edition of the "Canadian Textile Directory," published by Biggar, Samuel & Co., of Montreal and Toronto, Canada, contains over five hundred pages, and is a very complete book of reference for all branches of the trade in the Dominion It gives list of manufacturers, dealers, commission agents, associations, boards of trade, customs tariff, department stores, dyestuffs dealers, textile exports and imports, furniture makers, laundries, paper mills, tanneries, wool dealers, and a great deal of other information that is useful.—Wade's Fibre and Fabric, Boston.

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.

John Clifford, Galetta, Ont., an old employee in the woolen mill at that place, died there recently.

B Pratley and Geo. Dormer, Peterborough, Ont., have taken positions in the large woolen mills at Lawrence, Mass.

The Minerva Mnfg Co., Toronto, gave its annual ball and supper to its employees and their friends, Dec. 8th. About 600 were present

Jno Penman, Esq., Paris, Ont., is installing a model electric plant for the lighting of his residence, purchased from the Canadian General Electric Co.

The plant of the Berlin, Ont, Rubber Co. was given a test on November 10th The special machinery was supplied by the Birmingham Foundry Co., Derby, Conn

J Grierson, lately superintendent of the Hamilton woolen mills, Carleton Place, Ont., has taken a similar post in T. B. Caldwell's woolen mills, Lanark, Ont.

The plans for the new electric plant for the Toronto Rubber Shoe Mnfg Co., at Port Dalhousie, Ont., were prepared by R J Parke, consulting electrician, Toronto.

The Royal Paper Mills Co, East Angus, Que., is adding two new digesters which will add 50 per cent. to the capacity. Two new boilers will be put in and a large brick chimney built

Geo. Dick, lately superintendent of the Gillies Mnfg. Co.'s woolen mill, Carleton Place, Ont., has taken a similar position with the management of the Hawthorne woolen mills, Carleton Place.

The Francis & Brazeau woolen mill at Pakenham, Ont., recently was in danger of being destroyed by fire which caught in the picker room. The blaze was put out by the firm's own apparatus.

The Canadian Rubber Co., Montreal, has placed contracts for a warehouse of large dimensions in that city. It is intended that the establishment will be 180 x 170 feet, occupying the entire block which faces Craig, St. Adolphe, Notre Dame streets and Papineau square.

C. R. Whitehead has been re-elected president of the Montmorency Cotton Mills Co., of Montmorency Falls, Que. The company now employs 550 hands, and proposes to build a new mill next year to be devoted to the export trade. The new mill will ship cotton goods, chiefly to China and East Africa.

Redpath-Reid automatic smoke consumers have been installed in the following plants among others: Mitchell waterworks and electric plant, Mitchell; American Rattan Co., Walkerton; Canadian Colored Cotton Mills, Hamilton; George Pattinson & Co., Preston; Lambton Woolen Mills, Lambton; Canadian Colored Cotton Mills, Merritton; Brighton Canning Co., Brighton, Ont., and Central Ontario Railway Co.

Ahearn & Soper, electrical engineers, Ottawa, have orders for motors to the aggregate of 4,000 h.p. for the Dominion Cotton Mills Co.'s two mills in Montreal. These are of the Westinghouse induction type, and form the most complete and extensive electrical equipment of any cotton mill in the world. Among other electrical installations by this firm in Montreal are a 100 h.p. motor for the Dominion Oil Cloth Co.'s new factory; a motor for P. Lyall's marble works, and three motors for the Wire and Cable Co.'s new works in Beaver Hall Hill.

With the addition of a large lot of new worsted manufacturing machinery, which is now on the way from England, the Rosamond Woolen Co. found it necessary to secure increased motive power to run their immense establishment, and this week a new 460-h.p. water-wheel arrived from Sherbrooke to fit the emergency, says The Almonte Gazette, recently. Preparations are now being made for installing the new wheel, which, like all the other machinery that is being added, is thoroughly up-to-date. The immense amount of money expended in recent years by the R. W. Co. for plant, buildings, etc., shows that the management is also thoroughly up to the times in business methods. There is probably no better manufacturing plant in Canada than the one in what has been well named "Number One Mill," and the wish of all is that it may be kept constantly on the move.

It is only reasonable that if industrial companies employ children in factories they must be held responsible for any harm which may happen such children. This principle was laid down recently at Montreal by Justice Gill in rendering judgment in the case of J. P. Beaume, tutor for his minor son, Eugene Beaume, against the Merchants' Cotton Company, for $1,999.99, for injuries sustained by the boy, which injuries will be permanent. The boy was 13 years and 5 months old on August 11, 1898, when he was employed along with other lads in the company's factory, in cleaning the machinery of cotton waste and other rubbish. The boy had been given some summary instructions in the work which was required of him by one of the assistant foremen, and then placed to work under a lad two years older than himself. While cleaning some machinery, his hand was caught and crushed. Taking all the circumstances of the case into consideration, and the fact that the lad will not lose the entire use of his hand, the Court assessed the damages at $850, and costs, and rendered judgment accordingly.

Quyon, Que., will, it is said, have a pulp mill.

The woolen mills at St. Hyacinthe, Que., are said to be part of the proposed knitting mill trust.

The Williams, Greene & Rome Co., shirt and collar manufacturers, threaten to leave Berlin, Ont., unless a bonus is granted by the town.

The Eastern Township Corset Co., St. Hyacinthe, Que., is enlarging its output of shirts and collars, which is a new line begun about a year ago.

It is stated that steps are being taken to establish works to make cotton duck belting, and cotton rope for rope driving, and smaller ropes and twines at Ottawa, Ont.

J. Ainley, manager of J. H. Wylie's woolen mills, Almonte, Ont., bought some new machinery for the Golden Fleece mill during a trip to the United States last month.

A cablegram from Durban, South Africa, received by Mrs. James Mavor, Toronto, states that her brother, David Wm. Watt, manager of the Natal Fiber Company, Ltd., Seaslope, Port Shepstone, Natal, died on Nov. 18.

About sixty of the principal wood-pulp and paper manufacturers of England are intending to visit Canada in June next to investigate the country's possibilities for the paper trade. S Charles Phillips, M.S.C.I., has been in Canada lately arranging for the visit.

Several of our leading cotton mills have recently put in apron presses for finishing napped goods supplied by D. Gessner, Worcester, Mass. Amongst these are the Canadian Colored Cotton Mills Co., Ltd.'s, mills at Merritton, Ont.; Cornwall, Ont., and Milltown, N.B.

W. Lynch, aged 15, an employee at Craig's hat factory, Truro, N.S., Nov. 16th, fell into a boiling vat of black dye, scalding himself from feet to middle. He only saved himself from falling head foremost to sure death, by catching hold of a steam pipe, which burned his hands terribly.

A change has taken place in the management of the Northrop Loom Co.'s works. Mr. Bigelow, who has had charge for a year, has been replaced by Charles Bethell, of the Laurie Engine Co., Montreal, who came originally from Warrington, Lancashire, Eng.

The Merchants' Cotton Co. has placed an order for all the belting in its new extension, to contain 500 looms and 20,000 spindles, with D. K. McLaren, Montreal. The order includes 155 feet, 50 inch, 3 ply; 160 feet, 14 inch, 3 ply; 500 feet, 10 inch, 2 ply; 800 feet, 6 inch, 2 ply.

The Hudson Bay Knitting Co. has bought the business, machinery, fixtures, and stock of the Montreal Glove Co. It has been ascertained that the price paid was $4,573, the purchase being made from the Banque Ville Marie, which, until lately controlled the Montreal Glove Co., as we showed in an article in our last issue.

The Expositor, Ont., says: The citizens of Brantford will be pleased to learn that the proposed new wincey factory is assured beyond all possibility of doubt. The necessary stock has been subscribed, and the company has been floated. A large quantity of new machinery will be put in as soon as it can be made and brought here.

J. Graydon, contractor; J. F. Switzer, beekeeper, and F. A. Clarry, manufacturer, all of Streetsville, Ont.; George Sheldon Bingham, M.D., Hamilton, and W. P. Page, managing director of the Sun Savings and Loan Company, and formerly secretary of the Temperance Colonization Co., and W. P. Bull, barrister-at-law, Toronto, are being incorporated as the Imperial Woolen Mills Co., Ltd., with a capital of $200,000 to operate the mills of the Streetsville, Ont., Woolen Mnfg. Co.

R. Leach, Almonte, has moved to Renfrew, Ont., where he has secured a situation in the woolen mill.

The Stratford Clothing Co will move to Toronto January 1st, where it is its intention to go into the manufacturing of clothing on a larger scale.

A felt manufactory has been established at Regina by Boez & Co. Felt will be manufactured and felt articles, boots, blankets, etc., will be made.

A. Campbell, F. Lannigan, B. Byer, M. Murdock and J. W. Blair, Montreal, are applying for incorporation as the A. S. Campbell Co., with $50,000 capital, to manufacture clothing in Montreal.

A member of the firm of Mallison Bros., Ltd., Manchester, Eng., has come to live in Toronto; and it is stated as among the possibilities that this firm will erect a cotton mill for hosiery yarns.

W. B. Smith, a carpenter in the Brodie woolen mills, Hespeler, Ont., had a narrow escape from death recently. While working at the ceiling he was caught in a belt and drawn around the shafting, but was almost unhurt.

The Toronto Globe recently announced the formation of the Toronto Worsted and Tweed Co., with a capital of $150,000, and named as being interested in the scheme a number of leading manufacturers of woolen goods and clothing, wholesale dry goods men and wool merchants.

The Truro Knitting Mills Co.; capital, $100,000; will enlarge its plant. The building will, it is said, be 150 x 60 feet, and three stories, costing, when completed, about $15,000. About fifty hands are now employed, and when the mill is completed over 100 hands will be engaged.

A young man named A. Lauzon had his arm severely injured at the print works, Magog, Que., recently. While leaning over a machine the loose front of his shirt caught in a gear, and in his endeavor to free himself his right arm was drawn in, with the result that he sustained an extensive lacerated wound deep as the bone.

W. Ramsay Campbell, formerly of Almonte, Ont., is now assistant superintendent in the Cornwall Manufacturing Co.'s woolen mill at Cornwall, Ont. Recently he has been designer in the Excelsior mills in Montreal, and on leaving he was presented with an address and a valuable diamond ring

At the annual general meeting of the shareholders of the Montmorency Cotton Co., held at Montmorency Falls on Nov 20th, a very satisfactory report was presented by the board of directors. The capital is now $600,000, and there are about 550 operatives employed. It is proposed to build a new mill next year, looking to the foreign trade with China and Zanzibar, which is on a very satisfactory basis. The following directors were re-elected: C R. Whitehead, president; Herbert M Price, vice-president; Thomas Pringle, John T. Ross, L. G. Craig, Alex. Pringle, and I. N. Greenshields.

The Alaska Feather and Down Company, Ltd., has bought part of the old Clendinneng foundry, St. Henri, Montreal. The largest building, 350 x 60 feet, was formerly used as a stove foundry The company is putting in an 80 h.p. tubular horizontal boiler, and a 60 h.p. Wheelock engine. The building will be divided into three fireproof sections. The eastern part has the cotton openers, lappers, cards and felting machines. The centre section will contain the washing tanks for feathers, four steamers, separators, cold and hot blast machines, besides two powerful crushers. The mattress tables, 10 in number, and the mattress machines, are in this same section, as are also the feather bins and the pneumatic system, which carries the feathers from one machine to the other The stock, consisting of raw and purified feathers, comforter coverings, and mattresses, will be carried in the third section, 125 x 60 feet

The Eagle Knitting Co., Hamilton, Ont., had an extensive strike the end of last month. A new scale of wages was posted, which the girls in the finishing department refused to accept. New machines with a larger output had been installed, and the management claimed that even at reduced scale the wages would be much larger. At one time 300 hands were out. Finally the strikers were allowed to return to work as they wished to make a trial of the new scale.

The rush of combine formations seems to have struck Canada. We have two bicycle combinations lately, and the cotton combine is an old story. Promoters have now got their eyes fixed on knitting mill stocks, and options have been placed on a number of mills. Such a combination will be very profitable for the promoters, but anyone who knows how little money is required to set up a few knitting machines, and buy yarns with locally subscribed capital and the always-with-us bonus will agree that the chief work of the new company's directors will be buying up the new mills which will spring up all over.

FABRIC ITEMS.

Thomas Dickenson, of the firm of Dickenson, Nicholson & Co., wholesale dry goods and millinery, London, Ont., died last month.

J. T. Green, who has been for twelve years past traveller for R. C. Struthers & Co., London, Ont., has accepted a similar position with Gault Bros., Ltd., Montreal.

George W. Robinson, Galt, Ont., bought the Frederick W. Watkins stock at the auction sale in Hamilton, November 15, at 70c. on the dollar, valued at $125,500. By the terms of sale, the purchaser must sell the goods in the Watkins store, which he shall lease for at least two years.

Charles A. Briggs, the well-known hatter and furrier, of 2121 Notre Dame street, Montreal, died very suddenly last month, at the residence of his brother-in-law, Jos. Godin, on whom he was calling after returning from a short trip to St. Johns, Que. The death is attributed to heart disease.

R. V. Brock, who has represented his father's firm west of Winnipeg for some years, went to the Montreal house of the W. R. Brock Co., December 1, where he will be in charge of a department in the warehouse. Jas. Slessor is managing-director of the W. R. Brock Co., Ltd.'s, Montreal business.

Walter Blue, the well-known merchant of Sherbrooke, Que., died Nov. 19th, at the Royal Victoria Hospital, Montreal, death supervening upon an operation. Mr. Blue, who was about 50 years of age, had come up to Montreal from Sherbrooke for surgical treatment about a week before. The remains were conveyed to Sherbrooke for interment.

John Paterson, for sixteen years the western Ontario representative of Greenshields, Sons & Co., Montreal, and who is leaving the road to accept a higher position in the warehouse, was tendered a complimentary dinner at the Tecumseh House, London, by about seventy five of his fellow travellers. Toasts, songs, speeches, an address and a presentation followed the dinner.

The wholesale dry goods section of the Montreal Board of Trade has elected Jas. Rodger, president, and Jas. Slessor, vice president.

A. Bradshaw & Son, wholesale dry goods merchants, Wellington street east, Toronto, have bought No. 25 Wellington street west, formerly occupied by the Hunter, Rose Company. They have taken out a permit for an addition, and will remodel the building. The firm manufactures shirts, overalls, etc., and this department will be connected with the warehouse.

With the death of Edward F. Greene, one of the well-known figures in Montreal commercial circles for nearly fifty years, passed away. His father having established early in the century the fur manufacturing and wholesaling business, E. K. Greene became about 1850, the managing partner in Greene & Sons, of St. Paul street, his brother, George Greene, and other gentlemen being associated in the well-known firm. E. K. Greene retired, however, several years ago, and has been in weak health for a considerable time. Deceased, who was in his 70th year, had been an alderman of the city, and might probably, if he had chosen, have been prominent in politics.

Much surprise was expressed at the failure of the well-known Montreal house of Glover & Brais, wholesale haberdashers, with liabilities of $140,000 direct and $125,000 indirect, the majority of the creditors being in Canada. Among the largest creditors are George D. Ross & Company, $28,000; the Standard Shirt Company, $10,000; Montreal Suspender Company, $10,000. The banks chiefly interested are the Bank of Montreal and the Ontario bank, both of which are secured. The firm had been in business over twenty-five years.

The death in Montreal on the 6th December, of John Stirling, removes a very old landmark from the dry goods trade of Montreal. Mr. Stirling, who was in his 70th year, was born in Glasgow, Scotland, and came to Montreal in 1845. For a number of years he worked for the dry goods firm of Lautie & Co., and afterwards succeeded the firm in business, changing the style to Stirling, McCall & Co. The style was subsequently changed to John Stirling & Co. In the days when money was comparatively easily made in the wholesale dry goods trade, Mr. Stirling amassed a fairly good fortune, but under the stress of keen competition and modern methods the business died of atrophy, and about two years ago was closed up altogether. Mr. Stirling did not believe in advertising or any other of the modern methods, and though he did not lose any great amount of the money he had accumulated, he was content to allow things to run on in the old-fashioned way as long as running expenses were made. During the last five years of the business the office staff and travelers were gradually cut down till finally there was no one left in the establishment but himself and his office manager, Mr. McDougall, and their time was filled in by selling off remnants of the ancient stock of goods to odd customers, who might drop in for "auld lang syne." Often days would pass without a single caller, and it was a study to note these two old gentlemen coming down to the office and going through the same routine as if thousands of dollars' worth of goods were passing through the warehouse. Sometimes a whole day would pass without a word being exchanged between the two. Not that they were not always warm friends, but they had got into a routine of work which had become a second nature, while habits of discipline kept them silent when there was no actual business to transact. Personally, Mr. Stirling was a man of high integrity, and was sterling in character as well as in name. He was connected with the Montreal General Hospital for 25 years.

LITERARY NOTES.

Much has been said of the sturdy, frugal Dutch farmers of the Transvaal, but little is known of their sweethearts, wives and daughters, who have contributed so largely to the prosperity of the South African Republic. Consequently, an article on "The Boer Girl of South Africa," by the author of "Oom Paul's People," to appear in the January Ladies' Home Journal, will be interesting.

The cover of the December Century is suggestive of the approaching Christmas season, the central figure of the design, by Henry Hutt, being a kneeling angel, with outspread wings. Five tints of yellow and red are harmoniously blended in the printing, the lettering being in black. The brief opening poem, "The Old Master," is decorated by Edward Edwards, and illustrated by Louis Loeb in a frontispiece as seasonable as the cover,

and, like the cover, printed in tints. The color printing is not confined to the two examples mentioned. "The Christmas Dancers," a poem embodying a Saxon legend, is accompanied by several full-page pictures by Mr. Hutt. The holiday spirit breathes as well in Jacob A. Riis's story of New York's East Side, "The Kid Hangs up His Stocking," Dr. Weir Mitchell's poem, "King Christmas and Master New Year," the reproduction of Alden Weir's "A Christmas Tree," in the American Artists' Series, and Thomas A. Janvier's "A Provencal Christmas Postscript," being further legendary lore of Provence, derived at first hand from the poets and peasants among whom the author has passed several recent years. Conspicuous art features of the number are Cole's engraving of Sir Thomas Lawrence's Lord Derby, and a full-page reproduction of the bust of French's equestrian statue of Washington. In this number Sir Walter Besant begins a series of papers on life in East London, a subject that no writer knows more intimately. In telling the story of an imaginary girl of the tenement-houses, he is aided by the pencils of Joseph Pennell and Phil May, the best known of pictorial interpreters of the London slums. Attention will be attracted to Marian Warner Wildman's poem, "A Hill Prayer," by its decorative designs by Maxfield Parrish, and the editorial note that it won the first prize in the Century College Competition this year—and will be held by its poetic quality and artistic finish. A famous name, but one unfamiliar in the pages of American magazines, is that of Henryk Sienkiewicz, author of "Quo Vadis," who contributes a prose-poem, "The Judgment of Peter and Paul on Olympus." In the second instalment of his study of Oliver Cromwell, Mr. Morley takes up his hero at the beginning of his parliamentary career, and carries him forward to the call to arms, in 1642. The voyage from Samoa to Australia and Tasmania is that part of Capt. Slocum's odyssey which he describes this month, in the fourth chapter of "Sailing Alone Around the World." Dr. Weir Mitchell continues his revelations of the seamy side of the medical profession in "The Autobiography of a Quack;" Ernest Seton-Thompson, as author and artist both, gives a further glimpse of the life of a man-killing bear, in "The Biography of a Grizzly;" and other contributors of fiction are Margaret Sutton Briscoe, Harry Stillwell Edwards, Gelett Burgess, and Virginia Woodward Cloud. "Zionism" is explained by Prof. Richard Gottheil, of Columbia University, who interprets it as "a tremendous yearning to be better Jews, in order to be better men." And last to be named, but not least to be enjoyed, is John Burroughs on "The Art of Seeing Things"—an art in which he himself is a passed master.

John Worrall's Yorkshire Textile Directory for 1899 contains a list of the manufacturers and spinners of woolen and worsted goods, the flock, mungo, shoddy and waste manufacturers, the dyers and finishers, etc., of the Yorkshire district of England, including the Leeds, Huddersfield and Bradford manufacturing centres. It gives the products of each mill and other particulars on much the same plan as in The Canadian Textile Directory. Mr. Worrall also publishes other directories, covering all the textile manufacturing districts, and including the cotton, silk and all other departments of the textile trades. These books can be had through the publishers of The Canadian Journal of Fabrics at $2 each.

WOOL MARKET.

Toronto.—Since our last report the bulk of the Canadian wool has been disposed of in the United States markets at prices in the neighborhood of 20c. We quote: Pulled wool, 18 to 20c., and extras 21 to 23c.

Montreal.—The market is firm and advancing in sympathy

with the advance in London at the recent series of wool sales, which closed Dec 11th, at an advance of 12½ to 20 per cent. over the September series. Capes, 23 to 26c. in the grease; medium qualities, 18 to 24c for California, Australian merinos, market bare at 29 to 31c in the grease. No Northwest in the market. Canadian fleece getting very low in stock, and prices asked now 21 to 23c

TEXTILE PUBLICATIONS.

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

Worrall's Directory of Cotton Spinners, Manufacturers, Dyers, Calico-printers and Bleachers of Lancashire, giving the mills of the British cotton district, with number of looms and spindles, products of the mills, cable addresses, etc $2 00

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

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

The Wool Carder's Vade-Mecum, by Bramwell; third edition, revised and enlarged; illustrated; 12mo..... 2 50

Technology of Textile Design, by Posselt..... 5 00

The Dyeing of Textile Fabrics, by Hummel..... 2 00

Textile Calculations; very complete; by E. A. Posselt.... 2 00

CHEMICALS AND DYESTUFFS.

MONTREAL.

The demand for chemicals and dyestuffs is very light just now. *Prices continue to advance all along the line.* Soda ash, caustic soda, bleaching powder, alum, chlorate of potash are steadily advancing,

TORONTO.

Bleaching powder	$ 2 00	to	$ 2 20
Bicarb soda	2 00	"	2 05
Sal soda	0 75	"	0 80
Carbolic acid, 1 lb. bottles	0 36	"	0 39
Caustic soda, 60°	2 00	"	2 25
Caustic soda, 70°	2 35	"	2 60
Chlorate of potash	0 13	"	0 15
Alum	1 35	"	1 50
Copperas	0 65	"	0 70
Sulphur flour	2 00	"	2 50
Sulphur roll	2 00	"	3 00
Sulphate of copper	6 00	"	6 25
White sugar of lead	0 08	"	0 09
Bich. potash	0 10	"	0 11
Sumac, Sicily, per ton	75 00	"	80 00
Soda ash, 48° to 58°	1 30	"	1 40
Chip logwood	1 90	"	2 00
Castor oil	0 09	"	0 09½
Cocoanut oil	0 10	"	0 11

W. Currie, F. P. Currie, J. T. Shearer, Hon. J. A. Ouimet, J. Livingstone, Montreal, and T. E. Fee and E. S. Fee, St. Hyacinth, Que., have been incorporated as the Dufferin Falls Lumber, Pulp and Paper Company of Montreal, with a capital of $1,000,000; chief place of business, Montreal

Port Dalhousie is to be electrically lighted from a plant now being put into the Toronto Rubber Shoe Mufg. Co.'s works there. The machinery, which is supplied by the Royal Electric Co., provides for 10 arc lamps and 500 incandescent lamps for the village, and 20 arc and 600 incandescent lamps for the factory. There will also be a 10 h.p. motor for the elevator, and a 15 h.p. motor to drive the machinery in the factory, besides a 20 h.p. motor for the heating and ventilating plant.

—It is evident that fancy vestings are to again be in vogue for the coming spring season, writes the English correspondent of a contemporary, usually well informed. Last spring the favorite shade was dark and medium gray mixture, with various tones of spotting, mostly white or silver gray, with a light dash of green or red. The gray effect for ground is still to be retained, but the shade will be lighter than obtained last year. In fact, it is believed that the next spring season will be a "gray" one altogether. Blue-gray worsteds are to be used for suits in the twilled finish, and also in the close cut finish. The leading color also in Scotch tweeds will be gray mixtures, so that any maker who wants to be in the front for spring, 1900, must give attention to a range of grays, whether he makes fancy worsteds, cheviots or vestings.

— Henchcliffe, lately superintendent of the Slingsby Mnfg. Co.'s woolen mill, Brantford, Ont., has taken a similar position with the Excelsior woolen mills, Montreal.

— Miklejohn, lately superintendent of the Excelsior woolen mills, Montreal, has taken a similar position with the Cornwall Mnfg. Co., taking the place of the late D. Breckenbridge.

—A new process for silk bleaching has been patented in Germany. It to bleaching baths of peroxide of sodium or hydrogen a liquid alcohol, of the ethylic series, such as wood or ordinary spirit, is added, or glycerine, or ethyl aldehyde, or acetone, or any body belonging to the same series as the two last, the bleaching effect is greatly increased. Hitherto perfectly white silk could only be got from raw yellow material on condition of taking out the bast. Now it can be easily obtained without the loss of the bast. The supplementary bleaching agents can be used over and over again; they are added to the bleaching bath in quantities and at temperatures which depend upon the material and the degree and speed of bleaching required. In one example given a closed vessel fitted with an upward condensor contains 11 lbs. of raw yellow silk, 22 lbs. of commercial 3 per cent. peroxide of hydrogen, ammonia to neutralize the acidity of the peroxide, and 22 lbs. of raw acetone. The whole is boiled for one hour. In another example 11 lbs. of boiled chappi silk is left in the cold with about 33 lbs peroxide of hydrogen, ammonia, and 22 lbs of spirit for 24.48 hours. The same effect is produced, or even a better one, by an hour's boiling. The silk comes out a dazzling white in all cases

—The German Courts, as was anticipated from the result of English legislation, have confirmed the rejection of Thomas & Prevost's German mercerizing patent No. 85,564, declaring it null and void and saddling the appellants with the costs. The analogy between Thomas & Prevost's patent and that of Lowe has been recognized by the tribunal, and its decision is that the patent 85,564 protects, according to the opinion of the tribunal, as well as of the supporters of the patent, the tension of the vegetable fiber during mercerization, the particular condition of the fiber or combination of various kinds of fiber at the time is of no importance, and that this is exactly the subject matter of the English patent No. 4,452. The second point was a special one, on which the appellants for the patent relied, as they claimed the mercerization and dyeing of mixed tissues, of vegetable and animal fibers, to get two-color effects. As a consequence of the decision, the initial patent 97,694 taken out in 1878 by Thomas & Prevost, and recommending for mercerization under tension a special kind of fiber, more especially long stapled and closely-twisted cotton, stands alone. It is evident that it will now be attacked, though it will probably be harder to upset than No. 85,564; but until its fate is decided the J. B. Bemberg Company, licensees of the Thomas & Prevost patent, are instituting proceedings for infringement wherever cotton is mercerized in Germany. Forty actions have already been heard before various local tribunals, who have decided some one way some the other. Thus we have a great industry in a state of disorder which it would seem will take a long time to put straight.

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports from Great Britain, for October and the ten months ending October, 1898-1899

	Month of October.		Ten months ending October.	
	1898	1899	1898.	1899
Wool	£ 1,776	£ 4,254	£32,657	£18,843
Cotton piece-goods	20,117	31,084	370,266	443,295
Jute piece goods	10,995	7,929	108,972	95,574
Linen piece-goods	10,122	11,411	124,937	145,772
Silk lace	211	724	6,037	12,847
" articles partly of	2,122	3 552	26,756	44,048
Woolen fabrics	12,905	17,050	256,812	276,967
Worsted fabrics	21,446	26,998	491,303	474,244
Carpets	10,331	11,389	158,447	167,599
Apparel and slops	9,998	10,021	239,562	205,177
Haberdashery	4,756	8 852	123 596	143,845
Writing-paper, &c	2,479	4,893	20,709	24,855
Other paper	731	612	6,619	6,832
Stationery, other than paper	3,248	3,496	20,381	10,145