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CANADIAN Journal of Fabrics

THE JOURNAL OF THE
Textile Trades of Canada.

Vol. XX.

TORONTO AND MONTREAL, DECEMBER, 1903.

No. 12.

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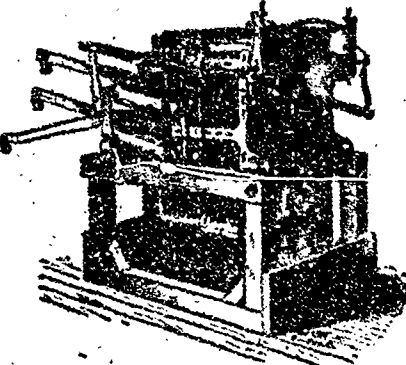
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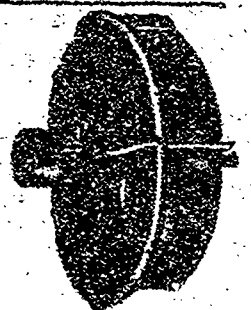
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Canadian Journal of Fabrics

THE JOURNAL OF THE
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Vol. XX.

TORONTO AND MONTREAL, DECEMBER, 1903.

No. 12.

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We close the volume with the wish that our subscribers and their friends may have a Joyous Christmas and that the coming year will be a better and a happier one for all our readers. We hope they have all found the Canadian Journal of Fabrics worth much more than the dollar asked, but if the subscriber has doubt on this point, let the account be squared and the paper stopped. Short accounts make long friends, and the proverb applies with special force to subscriptions. We will take it as a vote of confidence from all who remit, and encouraged by this vote we will try to produce a better paper next year. The paper will now be addressed by a printed label showing by figures the date to which the subscription is paid; for example 11-3 means that the subscription is paid to December, 1903. Subscribers changing their address will please give old, as well as the new, address.

THE FUTURE OF THE WOOL SUPPLY.

As Canadian textile manufacturers are large users of South African wool, they will have a special interest in that part of the Imperial Commissioner's report on South African trade conditions bearing upon the production of wool in the Orange River Colony. Under the old regime the Boers devoted themselves almost exclusively to stock-raising, and it is estimated that before the war there were 7,000,000 sheep in that colony, representing a clip of wool equal to 50,000 bales. The decimation, due to lack of pasturage and the needs of Tommy Atkins' larder during the campaign, was such that to-day there are probably not more than 1,000,000 sheep, and the clip must be proportionately less. According to the commissioner it will take five or six years to re-establish the flocks and herds, and in the interval the shortage of the South African wool supply will continue. This condition of affairs following closely in the wake of the serious losses to the Australian wool growers caused by the great droughts indicates that no reduction in the market price of wool can be looked for in the immediate future unless a compensating increase is forthcoming from the Argentina. But even if there should be a material increase in the supply from there it would not compensate for the shortages of colonial wool if the quality was inferior.

The Textile Manufacturer calls attention to the further inroads being made into the supply of wool by another factor, viz., the frozen meat industry. Our contemporary says: "It is now a few years since the advances made in the methods of freezing mutton first made their mark upon the wool trade. To the growth of this new industry we are largely indebted for the large proportion of cross-bred wool in our imports, for sheep farmers now consider other points than those connected with the fleece alone. In Australia and New Zealand the freezing establishments are in full work, and it is easy to see that the busier they are the shorter will be the future supplies of wool. There is at present a phenomenal demand, not only for sheep, but for lambs, for freezing purposes, and the demand seems to be limited only by the supply. Just after a long and disastrous drought many pastoralists are in need of

ready money, and in this manner many who even see the folly of such a course are tempted to take advantage of the present high prices. Flocks comprising thousands of sheep are being driven to the freezing establishments at Adelaide from places sometimes more than a thousand miles away, as long as six months being occupied by the journey. At the bi-weekly markets in Adelaide up to 2,500 lambs are yarded, and these find ready purchasers at good prices. They are all destined for the freezing process, and mean so many fleeces less at the next shearing. One freezing establishment at Sydney turns out 40,000 carcasses a month, and the thinning process grows apace, showing a possibility of increase rather than decrease. How these changes will affect the wool trade it is not difficult to predict, but the full extent has not yet been reached and cannot be estimated. There must be a curtailment some time, or both wool trade and frozen mutton industry will die out, although some consider that the new phase of affairs is not nearly as disastrous as a bad drought. Others look upon the present condition of affairs as decidedly beneficial, both to the sheep farmer and the general public, for while the latter gets cheap mutton, the former clears out unsatisfactory breeds of sheep at a good profit. There are signs that many pastoralists are taking advantage of the times to replace unsatisfactory animals by high-class stock, and already the best stud rams are in great demand, while the stud flocks of some breeders are likely to prove veritable gold mines. How this will affect the wool has yet to be seen, for if the prospects are brighter for mutton than for wool, points favorable to the former will be chosen, and the latter will have to take its chance."

In view of all these facts we are pleased to note that the farmers in Alberta are being encouraged to raise sheep for the purpose of providing wool for the mills. This step seems to point to one way in which Canadians may find a solution to what promises in the future to be a serious problem; for the raising of sheep for mutton rather than for wool has marked the course of the wool trade in this country as in the Argentine Republic and Australia and New Zealand. This is particularly the case in Ontario, our largest wool-growing province, and the present indications of the world's wool market point to a good profit for the next few years to sheep raisers in Canada who will raise sheep primarily for wool instead of mutton.

AN ALL-BRITISH COTTON SUPPLY.

The Journal of Fabrics has on more than one occasion urged the necessity of growing cotton within the Empire to such an extent as to make the British manufacturer independent of other nations in regard to the supply of that article. It is, therefore, encouraging to note that present indications point to the

establishment in the near future of a cotton-growing industry within the British Empire on a scale sufficiently large to feed all the spindles in the Mother Country and the colonies. Owing mainly to the efforts of Sir Alfred Jones, the enterprising head of the Elder-Dempster Shipping Company, and the British Cotton Growing Association, the whole of the West African colonies have been made to take a deep interest in raising cotton. Already cotton equal in quality to that of America is being shipped from West Africa to Liverpool by the steamers of the Elder-Dempster Company, who, in order to encourage the industry, are for the present carrying it free of charge. In the West Indies cotton is being grown on thousands of acres, and within the next year about 20,000 acres more will be brought under cultivation. Sir Daniel Morris has been sent out by the Imperial Government to instruct the natives in the art of cotton growing, and it is believed that many of the planters will take up this industry. Again in Egypt arrangements are being made for the development of the Soudan as a cotton-growing area. Lord Cromer, who is in entire sympathy with the Cotton Growers' Association, is pushing forward the construction of the Suakim-Berber Railway, which is to be the route of transportation of raw cotton from the Soudan. In Fiji, also, cotton is being cultivated with success, and an effort is being made to induce the British Government to enable upwards of one million acres of uncultivated land to become available for the production of cotton. India, also, is being looked to as providing in the future the largest supply, there being in that country 190,000,000 agriculturists. These and many other encouraging facts were brought to light at the first annual meeting and banquet of the Cotton Growers' Association held in Manchester, Eng., the principal speakers being the Duke of Marlborough; Sir Frederick Lugard, High Commissioner of Northern Nigeria; Sir Alfred Jones; the Lord Mayor of Manchester, J. A. Hutton; Alfred Emmott, M.P.; and Thos. Ashton, president of the Operative Spinners' Amalgamation. The Textile Journal, referring to the first year's work of the Cotton Growers' Association, says in part: "It seems almost incredible that our cotton spinners and manufacturers should have closed their eyes to the stern lesson of the Civil War of America, and have winked on during the last forty years while the United States have been forcibly disproving the Cobden theory, that they would abandon their factories and 'dig, delve, and plough for us.' To-day, we find that America is consuming an uncomfortably large percentage of the raw cotton she grows, and that if her manufactories continue to develop at the pace they have done during the past few years, especially in the Southern States, she will soon consume the whole of it. The area of cultivation of the raw material has unquestionably become inadequate to supply the great increase which has taken place in

recent years in the spindles of the world's factories, and sleepy England is vis-a-vis with a situation of the most embarrassing description. America monopolizes the bulk of her raw cotton, whilst Lancashire mills run short time; employers lose interest on their investments and capital; and operatives, for a protracted period in each year, suffer very keenly both in the monetary and physical sense. The unscrupulous American speculator, who, be it said, is usually very much awake, seizes hold of his opportunity—the period when the supply is running out—'corners' the rag-end of the crop—surplus rubbish, for the most part—and, while Lancashire starves, he hoards up his millions of dollars at her expense. For three years has this been the sad experience of those interested in the staple industry of Lancashire, and, with the prospect of this disastrous situation recurring annually, we are tempted to say that it is high time England woke up.

"It has fallen to the incentive of the Oldham Chamber of Commerce to institute a movement, the object of which has been to discover areas in our colonies and dependencies where soil, climate, and conditions of labor and transport were favorable to our planting and cultivating the growth of cotton. Experiments of the most promising character have been made, and, thanks to the patriotism and philanthropy of the Elder-Dempster Company of shippers, cotton of a quality, in many cases, the equal of that grown in the Southern States of America has been conveyed to Liverpool and disposed of there at a profit to the grower and the consumer alike.

"The British Cotton Growing Association has justified its existence, and its encouraging position at the end of twelve months' untiring labor is the one ray of sunshine that pierces the gloom overhanging the textile industry of Great Britain. British Empire-grown cotton is now something more than a dream: it is already a substantial reality. The prospects are that, within the next few years, the great cotton mills of Lancashire, the most colossal and busiest industrial hives of the world, will be fed by raw cotton grown under the British flag. The Imperialism and astuteness of our most practical mercantile men have impelled them to catch up the effort which has been engineered at Oldham, and with support at the Colonial Office reflected in the sympathetic and solid speech of the Duke of Marlborough, the movement is rapidly taking shape, and promises to prove one of the most important national developments that will be recorded in the twentieth century."

FORESTS AND WATER POWERS.

Much alarm is being felt in the Eastern Townships of Quebec on account of the continued drought and consequent lowness of the rivers. The Magog river has

never been so low in the memory of living men. The flow at Sherbrooke is less than half the usual amount, thereby rendering the water power inadequate to run the textile and other factories in the district. The Paton Manufacturing Company, A. Lomas & Son's two mills at Sherbrooke, are unable to work full time, and the Dominion Cotton Mills are in danger of being closed at Magog unless the water rises soon. The electric light systems along the river are also partially paralyzed. Mr. Thos Tremblay, C.E., who recently visited Magog for the purpose of determining the conditions there, has recommended to the Sherbrooke city council that the surface of Lake Memphremagog be lowered one foot below the present level. This would necessitate a canal being made sixty feet wide, two feet deep and one hundred and fifty feet long, and the removal of a ridge opposite the Battles House. The total cost of the work would be about \$1,650, and if carried out, the natural flow of the river would be kept up to about 30,000 cubic feet per minute for nearly two months. The Water Committee are conferring with the Dominion Cotton Mills with a view to securing their co-operation in carrying out this proposal. It is to be hoped that steps will be taken without delay to remove all risk of a recurrence of the existing situation. It would be nothing short of a calamity for the industries of any district to be paralyzed through lack of foresight in not making adequate provision against the possible failure of the water supply. In the present case it would seem that the outlay of \$1,650 would have enabled the present crisis to have been passed without the mills running on short time, and this is certainly a very small sum compared with the loss in wages to the employees. It would be unfair to seek to blame anyone for the present shortage of power, but it behooves manufacturers using water power and those responsible for the provision of the said power in all parts of the Dominion to see to it that every possible means are adopted to avoid closing the factories during a prolonged period of drought, and especially so in those industries where the closing down, or even running on short time, affects a large number of employees, as in the case of textile mills. The outlay of a little extra capital at first may result in the saving of very many times that amount in the long run to both the manufacturer and his employees.

Closely connected with the conservation of adequate water powers in Canadian rivers is the important question of forestry, and it is to be regretted that manufacturers do not take more interest in this subject, it being one which has a very important bearing upon the climate, rainfall and water supply of our rivers and lakes. We commend to our readers the following remarks upon this subject, published in the Pulp and Paper Magazine of Canada.

"To those who have not studied the question it may seem strange that the reforestation of the country

should be a matter of personal concern to a farmer, but those, for instance, who have lived fifty years in the Allegheny region of the United States can tell a strange story of change of climate and condition brought about by stripping the country of trees. Early settlers on the slopes of the Allegheny Mountains can remember when the rivers and streams ran all the year through, and there was scarcely any drought. Now, since the land has been cleared of woods, they complain that during one part of the year the country is subject to deluges, which sweep away towns and villages (for example the terrible Johnstown flood), and hundreds of thousands of dollars in bridges and other public works, while during the following summer the land is parched with drought. In fact the country in sections has become sterile through this cause. Seeing these changes worked out before their eyes through the wanton destruction of forests, almost every State in the Union either has created, or is preparing to create, a department of forestry, or a special commission to make a study of this question. Such universities as Harvard, Cornell, Yale and Columbia, have established forestry departments, and in every State thinking men realize the tremendous importance of forests as an influence on climate, rainfall and the water supply of lakes and rivers; as well as their importance to the manufacturing industries of the country.

"What is the situation in Canada in regard to the study of forestry? Not a single Canadian University has taken up forestry as a science, and only a few experiments in tree planting at the experimental farm at Ottawa are the measure of official thought given to it by the Dominion Government. So far as the pulpwood question is concerned, it is true that the Ontario Government has realized the importance of holding Canadian wood for Canadian mills, and has prohibited its export, except in the manufactured form of pulp. But in Quebec the situation is viewed in official quarters by looking through the reverse end of the telescope, so that the time for studying forestry as a practical need is so remote in futurity as to be indiscernible. The jubilation with which the Premier of Quebec boasts of having this year sold more tracts of pulpwood lands reminds one of Nero's violin obligato to the conflagration of Rome, except that, unlike Nero, the affable Premier of Quebec is wholly unconscious of either cruelty towards his people or of folly in regard to their future interests. His ill-timed joy is rather like that of a spendthrift boy who comes into an inheritance, and feels proud of the fact that he has been able to obtain possession of and spend half his fortune in the first year of his heritage.

"In view of the vast forests still untouched in Northern Quebec, it might at first thought appear that these comparisons are rather overdrawn, but let us look at the actual situation. In the large tracts of pulp lands in Quebec to-day what quantity of pulp timber

not already in possession of United States and other foreign owners is there within profitable shipping distance for the export trade? There may be a million square miles of pulp land in the Province, but if nineteenth-twentieths of it is so situated that the pulpwood cannot be brought to market except by expensive railway haulage, of what benefit is it to the Province from a commercial point of view?

"To come back to the climatology of the subject, the staple agricultural interests of Quebec are the dairy and its allied and dependent interests, such as hay-growing and cattle raising, and the great valley of the St. Lawrence is, under Providence, indebted for its success in these lines to the timely and well distributed rainfalls of summer. Strip these regions of the great forests, and what will be the effect on the climate? It is certain from the analogy of other countries that the Province would be turned into a land of alternate flood and drought, and its great dairy industry would be destroyed, until the forests were replaced, and even then the danger might not be repaired, for the reason that in many districts the depth of good surface is not sufficient, when once washed out, to enable trees to take hold again. The process by which the present forests grew and gathered under them the present soil, is in many places a growth of centuries; but the washing-out process, as has already been demonstrated in some districts of the Province, is a very rapid one, and leaves a grave problem, not only to the agriculturist, but to the forester.

"So we see that in this light-hearted destruction of the forests of Quebec those responsible for the present timber policy are not merely preventing an enormous possible development of the pulp and paper industry within the Province, but are, by altering the climate and rainfall of the St. Lawrence valley, likely to bring ruin on the future farming population which that great valley now supports. Indeed, the almost unprecedented drought of the present year may be the beginning of the permanent climatic changes which the wholesale destruction of the forests of this region will surely bring about."

There is much food for thought in all this, and we hope, before it is too late, that Canadian manufacturers will bring such pressure to bear upon our legislators as will prevent the wholesale destruction of the forests along our rivers, and so avoid the disastrous results that follow such devastation.

—The extracts we have published during the current year, and more especially in the last three months, from the more influential newspapers of both sides of politics as well as from the independent press, will show that at last the case of the Canadian woolen manufacturers is becoming understood. And being understood, we have enough confidence in the sense of justice possessed by the public and by their repre-

sentatives in Parliament to believe that they will make their voices felt with a Government which has acknowledged the unfair incidence of the preferential tariff, and has held out hopes of re-adjustment, but has heretofore done nothing to make good its protestation of friendly consideration for the textile trades. Rumblings of the coming general election are in the air, and this may account for some of the active sympathy of newspapers and politicians; but the woolen and other manufacturers of textiles have now to consider whether their party allegiance or their very existence as textile manufacturers is to determine their attitude in the coming campaign.

—Favorable results have been obtained by the introduction of electric power in the home-weaving industry at Anrath, a Rhenish town, where formerly cottage hand-weaving was extensively, though not very profitably, carried on. Consul-General Schwabach states that since electric power was introduced, the weavers, who still work in their homes, are much better off. They are employed by dealers, some of whom have also provided the new mechanical looms. These are paid for by means of small deductions from each delivery of goods until the cost is covered, when they become the absolute property of the weavers. The average price of a loom is £40, and the electric power per loom amounts to about £3 per annum. In addition to a much higher productive capacity, the new system requires less exertion on the part of the operator, and is a decided gain from a sanitary point of view. A single loom enables a workman to earn upwards of £1 10s. a week, and some weavers frequently work two looms. This suggests the use of electricity for many other purposes, where hand labor has hitherto been employed. It will probably come to be used extensively in operations on and about the farm.

—The movement for extending the growth of cotton into new areas of the British Empire is growing, and British manufacturers evidently realize the risks that are run by a sole dependence upon the United States. The fact is that the continued development of cotton manufacturing in the Southern, as well as the Northern, States, will soon take up all the cotton crop of the continent, because the area of successful cotton growing in America cannot be extended much beyond its present limits. Apart, therefore, from the contingencies of war, pestilence or harvest failures, British cotton spinners must look for new fields for the growth of their raw material. It is satisfactory to learn that they are at last awake to the situation. Sir Alfred Jones, president of the British Cotton Growing Association, stated at its first annual meeting at Manchester, last month, that Lancashire must recognize the fact that her cotton supply, so far as America is concerned, will diminish year by year, and that she ought therefore to give them all the support possible in their endeavor to get cotton from new parts of the world. In Africa they had got past the experimental stage in the matter. Money had been made by growing cotton there,

and selling it in England, and by-and-by they would have a great cotton crop from Africa. Sir F. D. Lugard, High Commissioner of Northern Nigeria, speaking at the same meeting, stated that the soil of Nigeria was admirably suited to the growing of cotton.

—The unfavorable condition of the sheep industry in Australia is shown by one or two facts. A little over a year ago the largest sheep king owned 1,025,000 head of sheep. At his last muster, early in the year, he owned a few over 20,000 head. The fodder bill of one of the largest stock-owners in New South Wales was, for many months, £2,000 a week. Yet another squatter paid for over three months £700 weekly, and when his pocket refused to stand the strain, the sheep were slaughtered and boiled down. There is still another authentic case, where a station manager wrote to his station owner in Melbourne that 16,000 of his sheep were too feeble from want to travel from the station to the nearest railway line, from thence to be railed to green pastures farther south. The reply telegram from the owner was brief and to the point—"Cut their throats." So perished the 16,000. Another owner employed twenty special trains to carry away some 30,000 sheep from the drought stricken districts to where rain and grass could be found. In 1897, in New South Wales, there were 62 millions of sheep; in August, 1902, there were 33 millions. The Premier of New South Wales recently reckoned that there are in his colony only 22 millions, a decrease of 40 millions in eleven years—i.e., a loss of about 9,000,000 more sheep than there are in the whole of the United Kingdom. In 1892 Queensland reached her maximum number with 21 millions. At the end of 1901 she had 10 millions, and since then the deficiency has increased. What wonder that the price of Australian wool should advance.

TEXTILE PATENTS.

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

No. 80,582. M. Cleaver, Lebanon, Ky., U.S.A., horse blanket. A blanket having converging hip and shoulder straps arranged to be crossed beneath the animal and secured on the other side. Also forwardly extended neck straps, secured at the same point. The object of this arrangement is to secure the blanket to the animal in such a way as to prevent its being easily removed or disarranged.

No. 80,120. H. B. Thomas, Michigan City, Ind., U.S.A., a chair with a covering consisting of braided paper cord impregnated with a hardening substance, the strands of each braid, and the rows of braid being cemented together.

No. 80,187. T. W. Norman, Boston, Mass., U.S.A., a cordage machine comprising a flier and mechanism co-operating therewith, effective to twist the yarn twice for each revolution of the flier, a pull down for feeding cord at a uniform speed, a reel for taking up the cord as it is fed forward by the pull down, a rotary flier extending lengthwise of the axis of the reel, means for rotating the flier, and imparting movement from the said flier to the take-up reel, and rotating the latter at a variable speed.

Nos. 80,338 and 80,339. H. Pamtschek and C. Herold, Zeile, Braun, Austria, apparatus for beating up the weft in looms. This invention consists of a stationary lathe with a shaft provided with combs mounted in front thereof, crank arms into which the shaft is journaled, means to raise and lower the latter and rotate the combs to beat the weft.

No. 80,585. J. A. Anderson, Oneida, N.Y., and A. M. Holstein, Syracuse, N.Y., U.S.A., a new method of making fabric-covered ornaments or mouldings by means of a body of permanently pliable material containing an adhesive element and having an ornamented surface and a fabric of silk, satin, broadcloth, or plush applied to the surface of the plastic material in its usual dry state and made to adhere thereto without further treatment.

No. 80,297. E. Bentley, Manhattan, N.Y., embroidery seams.

No. 80,355. Max Erport, Straupitz, near Hirschberg, Silesia, Germany, a process for manufacturing size, consisting in heating resin or resin lime, mixing it with water under steam pressure and pressing the heated mixture in atomized state into lime water, for the purpose of bringing about perfect emulsion.

No. 81,014. A. C. Hough, Worcester, Mass., U.S.A., loom shuttle operating mechanism. This invention consists of a reciprocable shuttle, a spring controlled picker finger at each end of the loom for actuating the said shuttle, means for forcing back against the spring tension each of the said picker fingers and holding them releasably in such position, the arrangement being such that the picker finger at one end of the loom cannot be released to actuate the shuttle until the picker finger at the other end is in operative position.

No. 81,015. A. C. Hough, Worcester, Mass., U.S.A., a loom take-up mechanism consisting of take-up rolls, a panel and ratchet device, for rotating the rolls automatically, a cam upon the main driving shaft for operating the same, and supplementary means whereby the rolls may be actuated manually independent of the cam.

No. 80,825. A. Smith and S. Jackson, Keighley, England, an arrangement for automatically changing shuttles on looms on failure of weft, the rigid shuttle having a movable bottom attached to a swinging arm operated from a tappet on the boss of the shaft, and having mechanisms for raising the shuttle box front, ejecting the spent shuttle, placing a full shuttle in the box from the magazine, and restarting the loom whilst the primary motions of the latter are at rest.

No. 81,087. G. A. Fredenburg, Pawtucket, Rhode Island, U.S.A., a thread dressing machine consisting of twisting, brushing, ironing, and winding devices, with a traversing mechanism for the thread winding, consisting of a horizontal traverse rail having thread eyes contiguous to the winding spools and a driving pulley deriving motion and power from the main shaft of the machine.

No. 81,199. W. Holdsworth, Toronto, Ontario, a cloth shrinking machine, consisting of a shrinking chamber having a steam inlet located in juxtaposition to the bottom, guide rolls located within the shrinking chamber, arranged to guide the cloth downwards from the top to near the bottom of the shrinking chamber and then upwards to the top again to expose a comparatively large area of material within the shrinking chamber to be acted upon by the steam, and retard the progress of the material through the shrinking chamber for that purpose, steam distributors interposed between the steam inlet and the guide rolls to cause an even distribution of the vapor, to all parts of the shrinking chamber.

No. 81,665. James Thompson, Pawtucket, Rhode Island, U.S.A., cotton manufacturing machinery consisting of a roll clearer with a guide extending between the rolls which by embracing the opposite sides of the sliver transmits its lateral reciprocating movement to the clearer.

No. 81,623. F. G. Shelain, Rockford, Ill., U.S.A., a mechanism for transversely severing knit fabrics, consisting of a pair of fluted rollers mounted parallel to each other, one in stationary and the other in laterally slidable bearings, the latter roller having transverse annular grooves sunk into the periphery thereof, springs normally impelling the slidable bearings and their roller towards its counterpart roller, means for driving such rollers, a mounted ratchet wheel, a bell crank having short arms and a long arm, rolls mounted in the free ends of the short arms of the bell crank and contacting peripherally the bottom of the annular grooves in the slidable roller, a pawl adapted to be engaged with and disengaged from the ratchet wheel, pivoted connections between such pawl and the free end of the long arm of the bell crank, the slidable roller being operative slidably by transverse welts on a web of knit fabric passing between such fluted rollers.

No. 81,200. J. T. Pearson, Burnley, England, a machine and apparatus for conditioning and humidifying yarn and other fibrous substances and materials consisting of the main frame, a humidifying tank supported thereby, a cloth roller journaled in the frame above the tank, a submerging roller journaled in the tank, compressing rollers journaled in the main frame, a conditioning cloth arranged to pass around the submerging roller and between the compressing rollers, and a vertical partition located below the compressing rollers having a ledge to cause the drainage of the surplus liquid removed by the compressing rollers into the tank.

No. 81,189. J. Coldwell and C. G. Gillard, Fall River, Mass., U.S.A., a stop motion for looms, consisting of opposite circuit rods, a lower intermediate contact bar, and opposite drop bar or detector retaining rods, of opposite series of detectors or drop bars adapted to be supported by the warp threads of the loom and mounted loosely on said circuit rods and provided at their outer sides with slots whereby the longitudinal movements of the drop bars are limited, and whereby an undesired removal thereof is prevented.

No. 81,275. J. F. Campbell, Mapleton, Kan., U.S.A., a mitten, consisting of a piece of fabric having double hand portions and integral thumb members, the hand portions and sides of the thumb sections being united by seams terminating between the bases of the thumbs, leaving an opening to permit of the mitten being turned inside out, thus to throw the seams wholly within the structure.

No. 81,298. Dr. E. Bronnert, Niedermorschweiler; Dr. Max Fremery and J. Urban, Oberbruch, Germany, the process of manufacturing silk-like threads or cellulose which consists in subjecting cellulose in the form described to bleaching or hydrating agents, dissolving the thus treated cellulose in solvents such as chloride of zinc or cuprammonia solution of sufficient strength at a low temperature to produce from such solution threads or the like, and then washing and drying, while being simultaneously spooled or wound upon rollers or bobbins.

—The Canada Woolen Mills, Limited, are asking the Court of Appeal, at Toronto, to set aside the judgment awarding an employee, Traplin, \$3,150 damages for injuries received in an elevator.

AN ENGLISHMAN'S VIEWS OF CANADIAN WOOLEN MANUFACTURING.

After a tour through all the principal woolen manufacturing centres of Canada, Thos. H. Jones, of the wool firm of Lucien Marcan, Bradford, was met by a representative of the Canadian Journal of Fabrics, and asked to give his impressions of the situation. Mr. Jones' observations are summarized below, and it will be seen that he takes a sympathetic view of the Canadian manufacturer's position, and at the same time makes some suggestions from which he may profit.

Your editor having been good enough to invite me to give my impressions of Canada, I presume the more the same are confined to matters connected with the textile industry, the more likely will they be of interest to your readers.

The question has been asked me several times how I had the equipment and management of the woolen factories here compared with those of European countries, having similar populations. As a rule, your factories in these respects, compare very favorably, not only with most of the countries with similar populations, but also with some which are manufacturing for far larger markets. In equipment, probably Belgium would take precedence, but one must take into consideration that although Belgium has only a small population, the factors of cheap skilled labor and absence of duty on all raw materials enable her to do an export trade.

A few days ago a gentleman largely interested in the Canadian textile industry, asked me how to account for the fact that although crossbred wools had advanced so enormously, Yorkshire manufacturers were offering cloths made from these wools at a very slight advance on old prices. In reply, I advanced two theories, firstly, that the average Yorkshire manufacturer carries a larger stock of raw material than his Canadian competitor, and as will be shown later is enabled to select better the time to make his purchases. Thus he is able to give his customer the advantage of cheaply bought raw material. This theory is not my own, although I have heard it advanced by those who ought to know, and I should say it does not apply anything like universally, as generally the Yorkshire manufacturer is shrewd to get the lion's share of any such advantage for himself.

The second theory which I consider more feasible is that the Yorkshire manufacturer, to use a proverb, "cuts his coat according to his cloth," or to put it plainly, makes his cloth to come in at a price. When wool prices are high he will therefore probably use more waste and shoddy and by judicious blending, carding, and finishing, produce a cloth at a lower cost, which will be passed by the buyer. Shoddy is used in Canada, but not to the same extent as in similar Yorkshire goods.

It would be presumptuous on my part to suggest to your manufacturers what they should use, as they know much better than I could tell them. Still I do not think anyone will dispute the fact that in no other country is such a small proportion of noils and wastes used as in Canada.

Most of the noils imported into Canada are carbonized and for underwear and hosiery. I admit the necessity of carbonization. On the other hand, I fail to see why a woolen manufacturer, with plenty of carding surface, should not use in his blends a fair proportion of noils, even if they contain "shine," provided they are not burry.

There are other wastes such as thread waste, card waste, laps, ring laps, most of which are produced by worsted spinners, and cannot be utilized by them. Hence the two great

worsted spinning countries, England and France, export such wastes to woolen manufacturers in other countries.

The worsted thread waste which I should say would interest Canadian manufacturers most should be garnetted, and your government calls it a shoddy in this state and levies duty upon it. I will not venture any opinion on the merits of this judgment, but simply mention that it shuts out a very useful raw material, which even such protective countries as France and Germany are glad to admit free of duty.

The question of most interest to the woolen manufacturer at the present appears to be that of tariff, and although my own firm is at present sending goods into Canada which would be adversely affected by any advance in the tariff, still I am bound to admit the justice of the woolen manufacturer's complaint.

A prohibitive duty against England would be unwise and unfair whilst the Chamberlain scheme is on the tapis, but your government should at any rate, place your manufacturers in a position to compete fairly with the English manufacturer, whereas, at the present time, it appears to me that the tariff on low wools against England is more than counterbalanced by the difficult conditions under which the Canadian is placed.

For instance, the Canadian operative is paid almost twice as much as the English operative, and whilst the latter is usually trained to the same kind of work from childhood onwards, the former is very often a jack of all trades. The result is, as I am told on unprejudiced authority, that the operative will turn out more work than the Canadian.

Then again there is a factor which I consider of even more importance, namely, that you are manufacturing for a small market and cannot specialize. In England, on the other hand, one man combs, a second spins, a third weaves, a fourth dyes, and a fifth finishes, and even these are subdivided, as one man will spin crossbreds only, and another only merinos. There are certainly many factories who buy the raw material and turn out the finished goods, but they generally confine themselves to a very few qualities, and it is no uncommon thing to find a factory where a large proportion of the machinery is running on the same class of goods all the year round. The buyer for such a factory can make his calculations with a mathematical exactitude, and can buy for stock when wools are low, knowing full well that the quality he is purchasing will suit the class of goods he is making.

On the other hand, your Canadian manufacturer has to make all classes of goods, and to do his own spinning, weaving, dyeing and finishing, and in many cases does not know what qualities he will have to make a month hence.

There are many other factors which operate to the disadvantage of your manufacturers, such as the difference in freights from England of raw material and the manufactured article; the difference in the rate of interest your manufacturer must pay; the duty he must pay on his imported machinery, yarn, shoddy, or mill supplies. Space forbids me, however, to enlarge upon them.

In conclusion I should like to take this opportunity to thank all the business men with whom I have been brought in contact whilst in Canada, for their invariable kindness and courtesy. After spending seven years drumming about on the European continent, one appreciates such things, and I am sure that an Englishman will not receive in any foreign country such an agreeable reception as he will do in Canada.

I shall always look back with pleasure to the visit made to your beautiful and prosperous country, and hope to give myself the pleasure of many more.

THE COTTON SITUATION.

The advance of 5 to 10 per cent. made this month by the Canadian cotton mills running on colored goods is only an incident in a situation of worldwide significance in the cotton trade. While it is the opinion of many in England that the official reports on the United States cotton crop of this year largely underestimate the yield, it is still true that the mills, not only in New England, but in the Southern States, as well, are being forced to curtail production for the next three or four months. This, with the recent cut of operatives' wages, affecting over 100,000 hands, in New England alone, will make a serious change in the industrial situation in the States, coming as it has at a time when trade in other lines was slackening. A. B. Hanford, president of the American Cotton Yarn Exchange, says the situation is the worst in many years, and that only the financially strongest mills will be able to keep going during the coming year. The United States Bureau of Agriculture estimate of the crop is 9,962,000 bales, compared with 10,300,000 last year, while the cotton actually on hand is 200,000 bales, compared with about a million last year. English operators have been very heavy buyers of raw cotton during the last three months.

FABRIC PRODUCED BY STITCHING.

A Russian inventor has been granted a patent on a fabric produced by stitching together a series of warp threads in a multiple of sewing machine. "A row or rows of needles are employed, the width of the row or rows corresponding to the width of the fabric. The needles may be similarly arranged, or some may work downwards and others upwards, for the purpose of economizing space. In order to produce patterns the needles may be divided into groups, and corresponding needles in these groups may be actuated simultaneously. The spindles of the rows of spool cases may be longitudinally movable so as to cause different under threads to be brought into working contact with various upper threads, or patterns may be produced in other ways. The upper and under threads of the sewing machine may be regarded as warp threads, and the weft may be fed from a drum on to a pin drum in zigzag form. From this drum an endless band with pins or spikes takes the thread and carries it under the needles. The needles may be beveled off at their points in such a way as to produce a closeness of the weft thread, and they may be arranged in such a way as to prevent any doming of the fabrics."

HALF-WOOL SHODDY DIAMINE BLACK.

Among new color samples issued by the Cassella Color Co., New York and Montreal, is a card showing dyeings on half-wool sheddies dyed in an acid bath, and subsequently cotton-dyed with Diamine Black RMW pat. The wool is dyed as usual in a boiling bath with the addition of 10 per cent. Glauber's salt, and 4 per cent. sulphuric acid, or with 16 to 15 per cent. bisulphate of soda; the goods are then well rinsed and cotton-dyed for three-quarters to one hour in a cold or lukewarm bath charged per ten gallons liquor with two to four lbs. Glauber's salt crystals, and three-quarters oz. soda and about four and one-half oz. of Diamine Black RMW for the production of the black shades, and three oz. of the same dyestuff for the production of the other shades of this card. After cotton-dyeing, the goods are thoroughly rinsed. The cotton-dyeing is best done in a washing ma-

chine, and as the liquor is not exhausted, it is used for dyeing subsequent lots after having been replenished according to necessity.

A card showing some very fine samples of dyeings on wool and fur-felt, dyed in the half-milled state with anthracene colors, has been received from Cassella Color Company, with the following directions as to the method of treating these goods: Charge the bath with the requisite quantities of dyestuff, and, according to depth of shade, with one to three per cent. sulphuric acid,* enter the previously wetted material at 85 to 105 deg. F., heat the bath slowly to the boil, and dye at the boil for one hour. Then after-treat with bichromate of potash for about one-half hour at the boil. Before adding the bichrome, it is advisable to cool off the bath to about 140 deg. F. and to bring it to the boil again subsequently.

MORDANTING WOOL.

In the usual method, i.e., heating the wool for one and a half or two hours in a bichromate bath with a reducing agent—the fibre is somewhat tendered. To avoid this, Amend treated the wool with one to two per cent. of chromic acid at 65 deg. C., and then passed it through sodium bisulphite. According to a French patent granted to E. Jung, the same thing can be done by using sulphocyanide of chromium and ammonium. This salt is prepared by dissolving chromium hydrate (precipitated from a solution of chromic chloride with ammonia), in ammonium sulphocyanide. The mordant bath is made of two to three per cent. of the double sulphocyanide, one-half per cent. of bichromate of soda, one-third per cent. sodium nitrate, one-third per cent. of sulphate of copper, and one and one-half per cent. of sulphuric acid. The goods are entered cold and heated slowly from 60 to 65 deg. C. Half an hour of this temperature suffices. The bath is not fully exhausted, and can be reinforced for further use. For logwood black, more chromium than above stated is necessary.

ELECTRICITY IN HOME WEAVING.

It seems that favorable results have been obtained by the introduction of electric power in the home weaving industry at Aurath, a Rhenish town, where formerly cottage hand weaving was extensively, though not very profitably, carried on. Contrary to what might be expected, it is said that since electric power has been introduced the weavers are far better off. Consul-General Schwabach in his report on the trade of Germany states that the weavers are employed by dealers, some of whom have also provided the new electric looms. These are paid for by means of small deductions from each delivery of goods until the cost is covered, when they become the absolute property of the weavers. The average price of a loom is \$195, and the electric power per loom amounts to about \$14.60 per annum. In addition to a much larger productive capacity, the use of electric power requires less exertion on the part of the operator, and is a decided gain all round.—Electric Engineer.

*When dyeing heavier material it is advisable to also add ten to fifteen per cent. Glauber's salt crystals. If the felts contain much acid, the addition of acid to the dye-bath may be correspondingly diminished.

ELECTRICITY AND THE DEVELOPMENT OF WATER POWERS.*

Everywhere throughout New England there are valuable power streams along which the rapid fall of the stream bed allows developments with heads of from ten to forty feet at mill sites situated in distance from each other of from half a mile to five miles. The mills using these have characteristically each a dam, a pond, and generally an auxiliary steam plant. This steam plant is useful not only when the water is insufficient, but also in operating the mills down stream on summer mornings when the water in the ponds above has not yet reached its natural channel; though, when once the flow has been established there is sufficient water for the operation of the mills, and during the majority of the working hours the steam plant is cut off.

Many of the mills so described have been located on account of the availability of the valuable water power and are to-day operating under great disadvantages from their inaccessibility, rendering necessary a heavy teaming bill for the haulage of raw material, finished product and coal. They are compelled to maintain extensive tenement districts in order to obtain operatives, though perhaps located within a short distance of a mill town or populous region. And, furthermore, in order to permit an arrangement of the mill which will connect the machinery properly to the water wheel, it frequently happens that they are located at sites entailing expensive original construction and unsatisfactory internal arrangements; besides the location along the streams often gives rise to great repair bills in times of flood, and finally, in such locations neither mills nor tenements are properly situated with reference to the best sanitary conditions.

The question of the applicability of electrical machinery in cotton mill work is undoubtedly not pertinent to this discussion, as I think you are all agreed that there are economies which can be effected in mill design and operation by the use of electrical motors and that the experience of the past ten years has proven that electrical machinery applied to cotton mill working improves to a very considerable extent the quality of the product. It is, however, necessary to call your attention to the fact that the improved quality of the product, whatever it may be, is largely on account of the fact that the motor tends to operate in synchronism with the speed of the dynamo, and in consequence this advantage, which may be considered as attached to the motor drive, is only present when the motor is driven by a large constant speed dynamo. With the same water-wheel driving a mill through the agency of a belt or through the agency of motors, there is probably comparatively little advantage in the use of the motor, although, even in this case, the irregularity of the slip of belts can be obviated.

It is, however, particularly pertinent to this discussion to consider the question of the value of water power as such, and it is not sufficient to simply state that the value of the water power is already well recognized by the mill owners, for, however true the statement, it is at best only a general one while we need here a more specific statement of estimate of value. Consulting engineers are in the habit of estimating water powers solely on the basis of the amount of power which is available for 365 days in the year, of 24 hours for each day. Perhaps they are wise in so estimating, as the mistakes they may make in underestimating the usefulness of the water power are very often counterbalanced by the mistakes they are also making in the cost

of its development and the possibilities of the market. But, however advisable it may be for the consulting engineer to neglect altogether the variable power a river is capable of furnishing, it is necessary in this discussion for us to consider the limits of variability which one should allow for development of a water power.

As has already been stated, New England mills are equipped with both steam and water power, and there is probably no body of men in the country more familiar with variable water power than this. Water powers not continuous require an equivalent steam power equipment of engines, boilers and men, with full interest charges, and in consequence such powers only effect a saving equivalent to the fuel consumption of the steam engine. This, with continuous power and coal at the average New England price, amounts to approximately \$36 per year, and in consequence it is not reasonable to contemplate the development of excess power beyond the continuous flow of the stream where the generation of the excess power involves capital and operation charges exceeding \$36 per year. Furthermore, I do not consider that it is safe to estimate that this means that one should expend as much as six hundred dollars per horse power for the development of excess power. Since a cotton mill organization which can only net six per cent. on the investment which it has made for machinery and equipment had better use its money in a banking business and go out of manufacturing. In fact, it is my opinion that it is unwise to develop the variable power of a river where the expenditure for this portion of the developing exceeds on the basis of twelve months supply power \$200 per horse power, or, in other words, \$100 per horse power for six months, or about \$150 per horse power for nine months. I am confidently of the opinion that it is economical to develop the variable power, where the continuous power does not exceed in cost \$300 per horse power, and the variable power does not exceed \$200 per horse power, based upon a continuous rate.

A statement has been made, and I believe that such a statement is hard to disprove, that the development for continuous power at a cost not exceeding \$300 per horse power produces energy at a rate with which steam plants cannot compete successfully, no matter what the cost of fuel, and I am further of the opinion that where the excess power for a development does not cost more than \$200 per horse power, it more than pays for the saving in fuel alone, and that this condition warrants the development of this excess power and the installation of a steam plant to be operated only during the time of the deficiency of water. As these opinions may not be easily justified in the installation of the plants having less than 1,000-h.p. minimum capacity, and as the majority of mills and water powers to which no argument might apply, are of less capacity than this, it may, at first sight, seem that the arguments which have been presented have no particular or general interest; but before you hastily arrive at this conclusion, I beg to call your attention to the fact that I have already stated, and hold that as the business of a banker is not, in my opinion, legitimate business for a cotton mill, I hold, reasoning along the same lines, that the development, generation and distribution of power is no more the business of a cotton mill than making investments of a banking character would be.

Certainly it is true that cotton mills have been built up along the water powers of New England, but as a consequence we find everywhere wasteful and expensive development of power, a lack of proper railroad facilities, and a general disregard for manufacturing convenience in consequence of a choice of site rendered necessary by the domination of the needs of past methods of water power develop-

* A paper by F. A. C. Perrine, D.Sc., Pittsfield, Mass., read before the N. E. Cotton Manufacturers' Association.

ment. The idea that I would bring forward is that of the centralized plant, developing power for the use of many cotton mills; as I believe that the manufacture of the power should not be considered one of the provinces of a cotton mill superintendent. In many cases, this means the purchase of power from an altogether independent concern from the mill itself, though in many cases I hope in the future to see central power plants owned by the cotton mills, precisely as they own their insurance companies to-day, with a separate and efficient management and with a common interest and aim.

It may be seen, then, that what I am intending to advocate is the complete development of the water powers in large units are not in small units, with auxiliary central steam plants, permitting at all times the distribution of constant power to the mills and the consequent location of the mill in reference to their product and operatives and not in reference to the power. In order to do this it is necessary to abandon the contemplation of small developments of individual falls and to substitute therefor the unification of many falls into one high head power wherever this can be accomplished by the means of flumes or dams. Whether this shall be done by the individual mills or a separate water power company, owned by the mills, is a question for each individual case. Generally in sections thickly covered by mills and intersected by power streams there is no doubt but what the central plant can easily utilize and concentrate all powers within a radius of thirty-five miles, tying the auxiliary steam plants and water power together by transmission lines so that the mills will be free, not only from the variation in the water supply, but also from interruption of service due to breakdowns of machinery.

The development of water powers at high heads has not only advantages on account of the fact that the inefficiency of many small wheels is eliminated, but also from the standpoint of the storage reservoir. Since with the high heads that are sometimes reasonably available, the quantity of water necessary to develop a large power is so much reduced that reservoirs become important, which under low heads are of inconsiderable capacity.

The disadvantage of the location of mills along the rivers is most beautifully shown in our neighboring cities of North Adams and Adams, where we will find mill after mill with foundations sunk in the river beds at a very considerable expense, and where once every five or ten years great repair bills on account of floods are encountered, though the configuration of the ground is such as would have permitted the consolidation of the water powers into one large, efficient central station plant.

The most notable example that has come to my attention of the wastefulness of low head development is to be found at Holyoke, where the canals consume space which should be available for good factory sites and where they are losing from 20 per cent. to 25 per cent. of the entire power developed by reason of the inefficiency of many low head wheels in series. I claim that it would not be correct to object that in such a case as that of Holyoke the inefficiency of electrical machinery and transmission would more than counterbalance the increased efficiency of the water-wheels, since we all know that the introduction of the electrical drive will of itself overcome the loss from belting amounting to more than the inefficiency of the electrical machinery and whatever increased efficiency there could be gained by the high head would be clear gain and increased power.

I do not intend in any of these instances to question the judgment of the builders of the mills or the developers

of the water powers. The last generation certainly presented evidences of having at least as good a quality of brains as we have to-day; but I claim that simply because our forefathers worked out their problems as they did, makes no reason for our slavishly following their footsteps when the work that they and we have done in other lines produces new conditions which make it unnecessary in the future to meet their disadvantages. The changes the past twenty years have made in the design of water-wheels and improvement of electrical machinery and steam engines renders to-day available the use of high water heads and long distance transmission and auxiliary steam plants, not only without a necessary decrease of efficiency but actually with an increase of efficiency and an improvement in the quality of the product.

What is here advocated then is the development by means of long flumes in large central power stations of as many rapidly flowing streams as are available; the development of streams that by reason of their distance from satisfactory factory sites have hitherto been considered unavailable; the increase in size of the power plants and the uniting under one management as many power plants as possible; as well as the operation under the same management of steam auxiliaries necessary for the delivery of constant power, the abandonment by the cotton manufacturers, as far as is consistent with present conditions of the generation of power as a part of their regular business, and the placing of this work in the hands of experts who will install the machinery, make the power and deliver it to the mill for the operation of their dynamos; the location of the mills themselves at points adapted entirely to their manufacture, taking into account both the accessibility to railroads and the comfort and convenience of their employees.

The present day marks an era of consolidation and specialization, and all that has been said is in direct line with this tendency, and is hardly more than calling attention to the fact of the improvements in hydraulics and hydraulic machinery, electrical generation, transmission and application and the great change now made possible in the methods of power application over anything that has been seen heretofore in New England.

The advantage of these principles has been widely appreciated in the regions of the Rocky Mountains and beyond and by their application the manufacturers of these regions have succeeded in overcoming their very great disadvantage of inaccessibility and expensive fuel, even where they have had to run flumes and ditches from five to fifty miles in length and have had to transmit power to such great distances that the limit I have set of thirty-five miles seems to the western engineers so short that they do not hesitate at rendering available, powers that are at least 100 miles from a possible market.

A CANADIAN WOMAN ON CANADIAN WOOLENS.

"A DAUGHTER OF CANADA," IN TORONTO NEWS.

I have been following with a good deal of interest the articles in your paper on the industries of Canada, and the brave struggle our manufacturers are making against the avalanche of competition that confronts them from the United States and Great Britain. A great deal is being written and said at present about Canada's attitude towards preferential trade within the Empire, but if the facts stated in The News of the 19th ult. about the woollen industry be true, and by personal examination of official statistics, I have come to the conclusion that they are just as stated, then, I think, it is time that our tariff makers should seriously look into the

effect of our present preferential tariff on the two industries most seriously affected by it, viz., woolens and cottons, but particularly the former.

I was amazed to find that woolens represented over twenty-seven cents in every dollar's worth of goods imported from Great Britain in 1902, and the importations this year have largely increased. There are over eighty lines of goods that come under the operations of the preferential tariff, with a total aggregate of over twenty-eight millions of dollars for 1902. Of this sum woolens alone contributed twenty-seven cents in every dollar, leaving the remaining seventy-three cents to be divided between the remaining seventy-nine or eighty industries. No wonder woolen mills are closing all over the country and woolen operatives moving to the United States. The question naturally arises: "Does the loss in work and wages to our own operatives bring increase of wages and comfort to the woolen operatives of England and Scotland? I do not think that the condition of the latter is materially benefited by the loss to the former. Two or three years ago I visited many of the manufacturing centres of the North of England, and took especial interest in observing the conditions obtaining amongst the workers in the different factories, carpet, tweed, worsted, etc. I saw the miserable, damp, crowded tenement houses, and the pale prematurely old faces of the little children, and found in several of the mills three generations of one family—the aged grandmother, the mother and the little child, the wages of all three being necessary for a bare subsistence. My heart turned with thankfulness and pride to Canada, with her happy, well-clad children, trooping out of comfortable homes on their way to school. I contrasted the rows of tenements in their crowded, bare ugliness and poverty with the average home of the Canadian mill operative, its warmth, pretty furnishings, books and music.

Nor do the appeals now being made to the working classes in Great Britain show that their condition is improving. I noticed that some of the late visiting delegates in speaking of the artisans' homes of Canada, said they were equal in comfort to any of the homes of the middle classes of Great Britain, and seemed astonished that this should be the case, as there is a very far cry between the artisan and the middle class of the Old Land. I think I am correct in saying that this preference on woolens benefits most the woolen manufacturers, many of whom seem to need it not at all.

There is no man who lives in more splendid comfort than the old-established woolen manufacturer of Great Britain. His father built his mills, equipped them, established his business, made his wealth and bequeathed him his mansion and broad lands. His sons and daughters are reared in luxury, and he himself rules like a little king over his army of operatives. This condition of things is impossible in Canada. Our industries are too new, our markets too changeable, our population too small. The cost of money, the price of wages, and the impossibility of specialization all combine to hamper the manufacturer, so that his profit on capital invested is very modest indeed. Our wholesale merchants have progressed much farther towards the luxury of living, shall I call it, than our manufacturers.

Now, Mr. Editor, as I am only a woman my opinion on the tariff—whether adverse or favorable—is a matter of supreme indifference to our lawmakers. But, although ladies have no privileges at the ballot box, they certainly have a great deal of power in regard to this very question. United action on the part of the women of Canada would make the preference concessions largely inoperative. The great army of shoppers is largely composed of women, and more

than half of the importations of woolens are purchased by women for dresses and suits for children, purchases of ready-made suits for ladies, girls and the smaller boys that are taking so largely the place of the material by the yard, she controls altogether. Now, if our women would band themselves together in a Canadian preference league, and demand to be served with Canadian goods only, there would soon be a great falling off in the importations, and our mills would take on renewed activity. I am sure every Canadian woman, who visited the Exhibition, must have been delighted with the display of Canadian-made woolen goods, and I am assured that they were all taken out of the ordinary stock of the mills. These goods were choice enough to suit the most fastidious taste, and still finer could be supplied were the demand for them not met by the imported article. Ladies make a great mistake when they conclude that because a dress length is imported it is, therefore, of necessity all wool. I know a shoddy manufacturer in the North of England whose profits last year were over \$70,000, the natural conclusion is that some North of England and Scotch tweeds must contain shoddy.

If some of our prominent society ladies would take the lead in this matter of preference for home woolens and cottons, a great change could be wrought in a very short time. We are imitators to a large extent, and love to follow the women who are the acknowledged leaders in fashionable dress. Just think how much Lady Aberdeen accomplished for the industries of Ireland by her influence and example. Then, too, the wives of our labor union men should be interested in this question, as it affects the interests of a great many of our working people, the woolen operatives, with their families, numbering over 60,000, or one-hundredth part of our entire population. But I claim that not only would such a movement benefit the woolen industry, but it must have a beneficial result on every other branch of industry, by reason of the increased prosperity it would bring to a large class of the people. It is estimated that about \$56,000,000 have been sent across the ocean for woolens in six years. Just think of the benefit of such sum spent in Canada for wages, stock, dyestuffs, chemicals, etc. I would like to show that giving preference to home industries is the truest patriotism to the Empire, as a whole, but I have already made this letter too lengthy, and will crave your indulgence for space in another issue of your valuable paper.

BRITISH TEXTILE TRADE WITH CANADA.

The following are the sterling values of the exports from Great Britain to Canada for October, and the ten months ending October of this and last year.

	Month of		Ten months end	
	Oct.	1903.	1902.	1903.
Raw wool	£2,040	£3,968	£25,795	£41,706
Cotton piece goods ..	40,141	39,981	668,806	653,834
Woolen tissues	28,205	27,909	476,920	490,762
Worsted tissues	34,882	37,614	602,066	769,072
Carpets	9,658	13,488	209,621	279,986
Haberdashery	18,043	24,984	186,635	309,503
Jute piece goods	18,096	19,292	147,399	181,484
Linen piece goods	10,326	9,292	156,040	157,671
Silk, lace	173	300	2,541	6,469
Silk, articles partly of ..	3,118	3,087	63,085	58,755
Apparel and slops (ready made clothing)	17,799	20,553	272,610	326,763

STRENGTH AND WEIGHT OF MANILA CORDAGE.

The following table shows the weight, strength and number of feet per lb. of manila cordage of diameters from 3-16 up to 3 3/8 in.

Size, Diameter Inches.	Weight of 100 Fathoms Manila in lbs.	Strain borne by new rope, lbs.	Feet in a lb.
3-16 in.	12	540	50 feet.
1/4 "	18	780	33 " 4 in.
5-16 "	24	1,000	25 "
3/8 "	30	1,280	20 "
7-16 "	37	1,562	17 " 8 "
1/2 "	40	2,250	13 "
9-16 "	65	3,062	9 " 3 "
5/8 "	80	4,000	7 " 6 "
3/4 "	98	5,000	6 "
13-16 "	120	6,250	5 "
7/8 "	142	7,500	4 " 3 "
1 "	170	9,000	3 " 6 "
1 1-16 "	200	10,500	3 "
1 1/8 "	230	12,250	2 " 7 "
1 1/4 "	271	14,000	2 " 3 "
1 5-16 "	310	16,000	1 " 11 "
1 3/8 "	340	18,062	1 " 8 "
1 1/2 "	390	20,250	1 " 6 "
1 9-16 "	435	22,500	1 " 5 "
1 5/8 "	480	25,000	1 " 3 "
1 3/4 "	581	30,250	1 "
2 "	678	36,000	10 2-3"
2 1/8 "	797	42,250	9 "
2 1/4 "	920	49,000	7 2-3"
2 1/2 "	1,106	56,250	6 1/2 "
2 3/8 "	1,265	64,000	5 1/2 "
2 7/8 "	1,420	72,250	5 "
3 "	1,572	81,000	4 1/2 "
3 1/8 "	1,760	90,250	4 "
3 1/4 "	1,951	100,000	3 1/2 "

A UNIQUE INSTITUTION.

The British and Foreign Bible Society is the only institution in the world which exists for the sole purpose of doing good to others and whose business is carried on without profit to itself. The centenary of this society, which occurs on the 6th March next, is to be specially celebrated in a unique way throughout the British Empire and in all foreign countries where its operations are carried on, by a "Universal Bible Sunday."

From an article in the November Canadian Magazine, it appears that there are in Canada twelve auxiliary societies with several hundred branches in all, some of them being over seventy years old, and that these auxiliaries contribute more in aid of the parent society in London than those of any other group of British colonies. It is proposed to raise a centenary thank-offering in Canada of \$50,000, and no doubt this amount will be much exceeded.

"The British and Foreign Bible Society came into existence in the year before Trafalgar, in the very gloomiest crisis of Britain's awful struggle with Napoleon and his Continental allies, while the poor were starving, trade was depressed and crippled by war, and the dread of French invasion weighed upon all, from the King on his throne to the laborer in his hut. Yet the new society not only won generous support from all classes in Great Britain, but the enthusiasm of its workers became a contagion which spread

into Europe, and it was the direct inspiration to the formation of a Bible society in the United States which afterwards became the American Bible Society, organized and maintained on similar lines—that is for the publication of the Word of God, and that alone 'without note or comment.'"

The British and Foreign Bible Society has circulated since the year of its birth 180,000,000 copies of the Scriptures, in whole or in part, and spent over £14,000,000 in the work. Its annual output is now 6,000,000 copies.

The article in the Canadian Magazine concludes: "This celebration may mean much to the British Empire, according to the spirit in which it is entered upon. It synchronizes with the movements now taking shape for a closer union of all parts of the Anglo-Saxon world. Whether these movements will result in the ligamentation of the scattered members of the present nations of Greater Britain (now comprising a fifth of the human race), into an Imperial federation surpassing in power for good any kingdom that has arisen since mankind appeared on the earth, or whether they will break up into incoherent fragments, depends really on this Empire's attitude to the Bible. 'Righteousness exalteth a nation.' In a large sense the Reformation resulted from a re-discovery of the Bible. During the reign of Queen Elizabeth no less than seventy editions of the English Bible were issued—a marvel considering the crudities of printing in that age—and the England of Elizabeth was a greater England than that of any era down to Victoria. It was in the age of Elizabeth that the Bible first became the book of the people and remained so to a greater extent than with most other nations. The history of the nations of Christianity has shown with ever-increasing clearness that those countries have become influential in the world in proportion as the Bible has entered into the life of the people. Therefore the reaffirmation of the Bible as the supreme law is the only way of establishing the new Empire on a safe foundation. Canadians need a re-discovery of the Bible, not only for Imperial reasons, but for the purification of home politics, and for the swift assimilation of the vast tide of immigrants pouring into our great West. It is the common testimony of missionaries and teachers that the best and quickest method of teaching a foreigner the English language is by the reading of the Bible in parallel passages, comparing it with the Bible in his own tongue. We know that a people nurtured on the Bible will be a sturdy, reliable and patriotic people; we know that in proportion as Christianity is the real basis of civil life, race prejudices will be broken down; race and class antipathies softened. Hence Canadian patriots can render the Empire and our own Dominion no greater service than by supporting a campaign of Bible study and of Bible circulation among our new citizens no less than in foreign lands."

STEAM TURBINES FOR TEXTILE MILLS.*

Within the past six years a great impetus has been given to steam engineering by the rapid development of the turbine as a substitute for reciprocating engines. The advantages are many. To a casual observer of a turbine installation, perhaps the most apparent are the small amount of attention necessary, the small number of moving parts, compactness and simplicity. All types consist of an opening or nozzle which may or may not be expending, which receives the steam and directs it at the proper velocity, against the revolving vanes. After the steam is discharged from the first set of vanes the residual velocity may be utilized to re-evaporate some portion of the moisture inherent to the process of ex-

* Condensed from a paper by Austin R. Dodge, Schenectady, N. Y.

pansion, and enter a second nozzle. This condition ensures expansion in straight lines, preventing eddies in the steam, but necessitates a high vane velocity or a multiplicity of parts.

With an increased number of stages, the velocity at the end of the nozzle is reduced, as the expansion is less, and a smaller number of wheels per nozzle is necessary to abstract the velocity, reducing the losses mentioned. The efficiency of action depends largely on the relative velocities of the steam jet and the moving vanes, and the energy required to rotate these vanes under the existing conditions of steam, density and moisture.

The author then makes comparisons between the efficiency of the Parsons, the De Laval, and the Curtis type of turbine—with the latter of which he appears to be connected in business—and then goes on to say:

The amount of capital invested in cotton manufacturing interests has been estimated at over two billion dollars. Let us consider the utility of the steam turbine in increasing the return from this investment. The desirability of the electric drive in textile mills has been clearly established, and has already been brought to your attention by Sidney B. Payne. The advent of the turbine, obviating the necessity of changing reciprocating motion to rotative motion will rapidly increase this application of electricity to your factories.

As to first cost of such an installation, a Curtis turbine requires only 7 per cent. of the floor space taken by a horizontal cross compound engine of the same capacity, and the cost of foundations is in about the same proportion in favor of the turbine. The weight is from 15 per cent. to 25 per cent. that of the engine. It is estimated that the saving in attendance charges will average 25 per cent. on the entire station pay roll. A turbine having but one moving part requires no adjustment, unlike a reciprocating engine with a large number of moving parts, which must be carefully inspected at frequent intervals by a skilled engineer. The economy, therefore, remains constant, which is not true on a reciprocating engine.

One of the principal requirements of textile mills is uniform speed. A turbine has a large amount of stored energy in its revolving parts and is therefore well adapted for work requiring close regulation. The variation in speed of the larger units is within two per cent., when the load is varied from no load to full load. Flywheels are not required on any type, as the driving force is always transmitted without angular variation; a desirable condition when generators are operated in parallel.

The first vertical turbine engine to be installed in this country was at Newport, R.I., and has given the following results which have not heretofore been published. Comparison with a Corliss cross compound condensing engine of similar capacity under the same conditions of pressure and superheat is also made, assuming the engine to have the same full load economy. Few engines of this capacity, even when new, can show as high efficiency at full load. The motors required to operate the circulating and air pumps for the condenser are driven from the turbine generator, and this power, about 20 kilowatts, is included in the output of the machine.

The station is arranged for four turbines, two of which have been put in service. Similar plants have been installed at Scranton, Pa.; Dover, N.H., and within the past year orders have increased to such an extent that 200,000-h.p. of turbines are under contract. A 600 kilowatt horizontal unit has been in continuous service at Schenectady for two years, operating for two periods of about four weeks each without a single shut down. A 1,500 kilowatt Curtis unit is in suc-

cessful operation at Port Huron, Mich., carrying a mixed load of motor power, railway and lighting. This turbine has the standard clearance of .03 to .05 inches between stationary and moving parts, and can be started cold and brought up to full speed in half an hour. It is easily brought into synchronism with other three-phase generators driven by cross compound engines. One 800-h.p. Russell, and one 500-h.p. Ball, both tandem compound engines, also one 500-h.p. Westinghouse cross compound engine, all condensing, have heretofore carried the load, about 750 kilowatts, requiring two 500-h.p. and one 250-h.p. Sterling boilers. With the turbine alone carrying the same load one of the 500-h.p. boilers is cut out. In textile mills the first units to be installed are three 500 kilowatt Curtis turbines at the Lane Cotton Mills, New Orleans, La., and two similar units at the Felton Bag and Cotton Mills, Atlanta, Ga.

WOOL MERCERIZATION.

Kertes, in an article on two-color styles got by printing caustic soda lye on wool, has shown that in the cold the material is not injured by strong lye, and recommends the use of lye of 40 deg. B. mixed with glycerine.

Buntrock obtained the following results from tests of the tensile strength of woolen yarns, treated for ten minutes with lyes of various strengths, after soaking and centrifuging. The rinsing was done very quickly, but thoroughly, first with very dilute hydrochloric acid, of about 1 per cent. and then with clean water. The dried yarns gave the following breaking strains:

Untreated yarn	610 grammes
Yarn treated with lye of 4 deg. B.	510 "
" " 10 deg. B.	430 "
" " 20 deg. B.	95 "
" " 24 deg. B.	200 "
" " 30 deg. B.	335 "
" " 40 deg. B.	717 "
" " 42 deg. B.	815 "
" " 44 deg. B.	740 "
" " 50 deg. B.	620 "

As already stated, the best time of action for strengthening purposes is five minutes. The following table of breaking strains after treatment with lye of 42 deg. B. shows the influence of time:

After 5 minutes	820 grammes
" 10 "	815 "
" 15 "	760 "
" 30 "	715 "
" 60 "	540 "

The following facts illustrate the effect of mixing glycerine with the lye. When the lye of 42 deg. B. was mixed with one-quarter of its weight of glycerine the breaking strain after an hour's action was 715 grammes instead of 540, and was 780 grammes when the lye had been mixed with half its weight of glycerine. Similar results were got with lyes of more destructive strength. While lye of 20 deg. B. destroyed the wool almost completely in ten minutes, the breaking strain of the yarn was still 550 grammes after ten minutes' immersion in the same lye mixed with one-quarter of its weight of glycerine, and 730 grammes when the lye was mixed with half its weight.

Buntrock's results were fully confirmed by the Philadelphia Textile School, although the treatment of the wool after leaving the mercerizing bath differed somewhat in the American experiment and Buntrock's, as in the former the

wool was rinsed with water before scouring, the Americans found that the wool acquired a silky lustre and feel. This is not stated by Buntrock, but if it turns out to be the case, its influence on the wool industry will be very great, especially as the lustring is accompanied by an increase in strength.

Rumors are already heard of a syndicate to exploit these results.—The Dyer and Calico Printer.

WOOL WASHING.

The efficient washing or scouring of the raw wool is a subject of considerable interest to the spinner who wants to receive his raw material in such a condition as will enable him to spin his yarn with the minimum of trouble and of waste, and this desideratum is much facilitated by care being exercised in the preliminary stage of wool washing. The fleece, when clipped from the sheep, is naturally dirty, oily, and full of yolk—a yellowish oil or fatty substance secreted by the skin glands, which serves the purpose of a lubricant for the fibre, prevents its matting or felting together, and softens the wool at the same time. It, however, imparts a certain degree of adhesiveness that causes the wool to take up soil and other kinds of dirt from the ground while the sheep is pasturing.

All this dirt and yolk must be removed, and the question comes up in connection with the matter: Is it better to wash the sheep before shearing or not? Different opinions have been expressed on this point. Really the matter is one largely dependent on local circumstances. For instance, in regard to wool of this country, it is preferable, we think, to shear the sheep first, and leave it to the professional wool-washer to deal with it, probably the scouring will be more satisfactorily carried out, and the wool left in better condition for the spinner. On the other hand, with Australian and American wools, it would be better to wash first, provided due care be taken, because if the wool is not scoured, changes may take place during transit, and the wool become stained and so rendered more difficult to bleach, while if heating occurs, which is quite possible, the texture of the fibre may be damaged. Then again, the dirt being removed, there must result a saving in freight between Australia or America and England, and the wool being in a better and more presentable condition the buyer is induced to give a little better price for it. It is not advisable to wash the wool so much as to take out all the yolk—for then the wool is apt to become somewhat harsh and horny, particularly if the washing liquors are rather alkaline. Every endeavor should be made on the part of the wool-washer to retain the soft feel and lustre of the wool.

The wool-washer wants to produce a clean and white wool, but he must be careful not to treat it in any way that will destroy its natural properties. If the wool comes up harsh in feel and of a yellowish tinge, there is most decidedly something wrong somewhere. Generally, if these defects occur, it may safely be put down to the presence of an excess of alkali, particularly of soda, and this will greatly depend on the kind of soap and alkali the wool-washer uses. The best soap is undoubtedly a potash soft soap, but there is a risk of this being adulterated with soda, for by using the latter alkali more water can be got into the soap without showing it. If alkali be added as well as soap, an excess would lead to this same defect. Then, again, if the temperature of the scouring bath is too high and soda be present, the defect is most likely to happen, for the action of the alkali is very much intensified. It is always advisable to test the soap for its contents of water, fatty matter, and alkali, a not very difficult operation, but requiring care.

The quality of the water used in the washing is not without some influence on the success or otherwise of the operation. To obtain the best result soft water must be used, but soft water is not always available, and hard water has often to be used. The hardness of water is due to its containing lime in the form of carbonate and sulphate, and these act on and destroy the soap which is used, forming insoluble lime soaps that collect on the wool, and lead very often to trouble in after-processes of dyeing and milling, for they are not easy to get rid of. When the wool-washer is compelled by force of circumstances to use hard water, it is decidedly cheaper and more preferable to soften the water by means of a proper quantity of lime and soda rather than to use soap, for a certain amount of the latter must be neutralized and destroyed by the lime salts in the water before the remainder can exert any scouring effect. Many forms of water-softening plant have been devised and are in use with excellent results, both as regards economy and better execution of the work for which the water is used. Where a proper softening plant is not available, the addition of 4 lb. caustic soda to 100 gallons of water will soften the water and make it more satisfactory for washing wool.—Textile Mercury.

THE WOOL INDUSTRY OF SOUTH AFRICA.

BY JAMES CASSIDY, IN THE TEXTILE MERCURY.

The woolly sheep now found in South Africa is not an African animal. The native African sheep has no wool, but is clothed with hair. In the eighteenth century, perhaps earlier, the Dutch endeavored to encourage the production of wool as an industry by importing wool-sheep, but the people thought the wool a poor compensation for the flesh and fat of the native animal. In 1790 Colonel Gordon, an officer in the service of the Dutch East India Company, introduced into the colony a number of woolled sheep, which had been presented by the King of Spain to the Government of Holland. The majority were distributed among the farmers, and mingled with the native sheep; the minority—twenty-nine—were "disposed of by sale, taken on to Australia by the English warships *Reliance* and *Supply*, and became the original progenitors of the many millions of fine-wooled sheep for which Australia is now renowned." It is a decidedly interesting fact to know that among the very first sheep sent to Australia were sheep from South Africa.

At the beginning of last century, great efforts were made by the British Government to promote the wool industry in the colony, and stringent laws were promulgated, owing to Earl Caledon's influence, actually prohibiting farmers from keeping the native sheep. But all to no purpose; wool-growing, as an industry, was a failure. However, after the British settlers of 1820 had got upon their feet, some of them attempted to introduce wool-sheep, and were successful; but it was not until after the emancipation of the slaves that sheep-farming and wool-growing became matters of importance. Different varieties of European sheep were tried until the best and most suitable was found, and there are now distributed over the colony some thirteen and a half millions of fine-wooled sheep.

The wool sheep does not become climatized until it has been again and again recrossed, each recrossing injuring the progeny. But, at the fifth descent, a difficulty occurs—the animal develops a tendency to drop its wool, so that it becomes absolutely necessary, if the quality of the wool is to be maintained, to reintroduce the European sheep. The best sheep runs are in the Karoo, and there are now de-

pastured over its plains nearly six millions of fine-wooled sheep, in flocks varying from one thousand five hundred to twenty thousand, besides upwards of two millions of "fat-tail" breeds, and numerous herds of goats, cattle, and horses. The Karoo plateau covers an area of one hundred thousand square miles, and supplies a valuable fodder suitable for all descriptions of stock. The sheep-runs in South Africa are something different from ordinary pasture in England. The run frequently extends over a tract of country of from 5,000 to 20,000 acres. In many places, where sheep pay best, the run will not bear more than one sheep to two acres, such is the scanty nature of the herbage.

The sheep-farmers shear their sheep twice a year, and the wool when shorn is usually sold by the owner to the nearest shopkeeper, but sometimes he takes it to the nearest town. In olden times he usually ran up his account and paid it in wool; now he often takes his wool to some



Wool Market at Port Elizabeth.

shop farther away, where he gets a better price. The shopkeeper sends it to the nearest railway, just done up in large bales; it is then carried near to the sea-coast, where it is washed.

The most important wool-washing centres are Uitenhage, near Port Elizabeth, and King Williamstown, near the frontier, the waters here possessing, in a marked degree, the peculiar qualities desirable for the successful operation; and, in the Western Province, the foot of Mitchell's Pass, in the Tulbagh Basin, one of the loveliest places in the world. "Fleece-washed" wool is wool washed on the sheep, some three weeks before shearing, the interval allowing the natural grease of the sheep to rise again, as it is very necessary that the wool should contain a certain quantity of this grease when offered for sale. After the sheep have been washed they are turned into a dry and clean enclosure, and there left for a time. The shorn wool, when washed, is dried by rotary machinery, regulated to a set speed that allows of a certain amount of oil remaining in the wool. It is then tightly bound with iron bands, and pressed by hydraulic force until it occupies about one-sixth of the space, for the convenience of storing in the ship's hold. It is then ready for export.

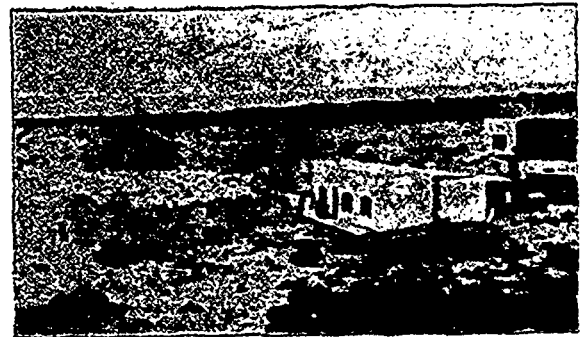
The washeries near Port Elizabeth number nine or ten, which employ about five hundred colored and a good number of white laborers, and are capable of treating nearly 50,000 bales yearly. All the washeries throughout the colony are worked by steam-power, and the process is everywhere the same, the wool being first soaked in hot water, and then rushed through drums of cold water. When clean, it is turned out on large drying grounds carefully paved with smooth pebbles, and the African sun gives it that brilliant whiteness for which it is famous.

Wool bales may contain many qualities, so every bale is cut open and a portion of the contents of each displayed

for the examination of would-be buyers. These bales contain unwashed and unpressed wool, and weigh from one to three hundred pounds each. The free fleece is not packed in bales. It sometimes happens that, if the wool has only a short distance to travel—say twenty miles—it is brought to the market in sacks. Port Elizabeth is the principal place of exportation for wool, because all the staple from the Free State and the Transvaal is brought there. From East London, Cape Town, Mossel Bay, and Port Natal, quantities of wool are also shipped. Most of the wool in Port Elizabeth is sold by private contract, but there are weekly auction sales in a large well-constructed market-building, where a good deal of business is done.

The wool-growing industry in South Africa has many enemies. The first of these is the burr weed *Xanthium spinosum*. This plant was introduced many years ago to South Africa, no one knows how; but all know it is not a native of the country. It spread with amazing rapidity. Great efforts, aided by special legislation, are made to extirpate the weed, but they are not entirely successful, on account of its rapid growth, and the fact that it springs up in unknown places.

The second enemy against which the wool-farmer has to contend is the scab, an animal parasite, which renders the wool valueless and frequently kills the sheep. The climate is, unfortunately, helpful to the disease. Various remedies are in use, principally washes—some are made with tobacco, and others with poisonous compounds—and scab can be kept in check. There is a Compulsory Scab Act in force in Cape Colony, but it meets with a great deal of opposition, particularly in the Northwest district, where it is found impossible to carry it out owing to the objections of the farmers. In some parts, it must be admitted, these objections are not baseless; for instance, where there is only sufficient water for the sheep to drink it is impossible to wash them. Then, again, game is also subject to the disease, and, of course, cannot be washed. Where, however, it has proved possible to carry out the provisions of the Act, it has been found to work advantageously. But the African farmer cannot be taught by precept, only by ex-



A Sheep Farm on the Karoo.

ample. To see a good device is, with him, to adopt it, if he sees it to be successful, but he must see the success. It is of no use merely telling him about it.

The third difficulty advanced by the farmer is the delicacy of the wool sheep, an animal subject to innumerable disorders. It often happens that nearly all the lambs of the season will die; at other times disease will carry off large portions of the flock; and during severe droughts the losses in live stock are extremely heavy. Finding, then, how delicate an animal the wool sheep really is, it is not

to be wondered at that the African farmer regards with animosity an Act the application of which he believes likely to further endanger the life of the sensitive creature. The temptation to breed the native "fat-tailed" Cape sheep is necessarily strong, it being a very much hardier animal, and less likely to fall a prey to disease.

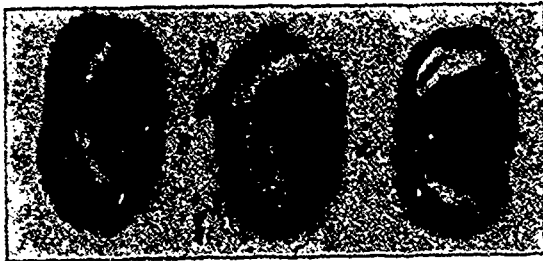
The daily life of the South African sheep farmer is not all dark-hued. It may be confidently asserted that he takes it pretty easily, getting from it his full share of enjoyment. In the morning he will send his sheep out with a native herd, and in the evening, when they return, he counts them, as they pass into the kraal—by no means so easy a task as might be supposed. Unless native depredators come down in the night, of course he finds them all there in the morning. In olden times, when there were no fences in the land, it was necessary to bring the sheep home every night and put them into kraals; but now that fencing is fairly common, in many places they are allowed to sleep out in the veldt—which is an advantage both to the flocks and to their owners. The sheep-kraals are rough enclosures, constructed sometimes of stone (flat slate slabs being abundant in most localities), or built up from sheep refuse, cut out from the floor of the kraal. This refuse, which accumulates rapidly, becomes like hard-baked peat, and is indeed used as fuel.

AN ENGLISH KNOT TYING DEVICE.

The Textile Recorder describes a device recently brought out in England to assist the operative in tying a knot. As we understand it, it does not, like the Barber knotter, tie the knot itself, but simply helps the operative to tie a better knot than by hand alone.

It consists of a single piece of steel wire bent round a small wooden handle, being clamped to it at either end. The wire forms a loop at the bottom of the handle, while the free ends of the wire project a little over an inch at the top.

One end of the wire is made in the form of a hook, and is ground on its inner edge to form a knife edge. The hook-shaped end is in close proximity to the other end, which is slightly rounded at its outer end. The handle is



Knot-Tying Device.

grooved down its edges to receive the wire. In tying the knot the knotter is placed, as shown in the left hand, with the hook on the first finger and the straight bar towards the centre of the left hand. The two ends that are to be tied are then taken between the thumb and first finger of the right hand, and the two threads are laid over the first finger of the left hand, beneath the hook, as shown in Fig. 1. The two threads are then brought over the top of the hook with the second finger of the right hand. The two ends are still held by the thumb and first finger of the right hand, and they are crossed through the slot as shown in Fig. 2. Now the threads and loose ends are held and drawn towards the

hook or knife, when the ends come together on the hook, forming a knot. The knot will be found to be perfectly tied, the ends left being only one-eighth of an inch long, as shown in Fig. 3. All that is now necessary is to pull away the short waste ends that have been cut from the knot.

It is claimed that not only is this device used by winders, and reelers, but that manufacturers are supplying them to weavers.

DYEING AND MAKING UP MIXED WOOL RESIDUES.

BY A. WINTER, IN THE DEUTSCHE FÄRBER ZEITUNG.

Whether the residues are used cleaned or uncleaned depends on their nature. In many cases they are used uncleaned in hat-making, such as the fragments which settle on various parts of the carding machine. This stuff is hollow-haired and coarser than that from which it is separated by the machine. It must, of course, not be mixed with fine material. As much as 30 per cent., or even more, of it is worked up with other wool, and the mixture needs longer milling and the use of a smaller milling cone. The parti-colored character of these wool residues makes the subsequent dyeing, unless of black or of dark colors, somewhat difficult. It is always advantageous to mordant with bichromate and oxalic acid, and then to rinse thoroughly. As the goods mixed with colored residues are usually acid-milled and carbonized they lose a lot of their color, and can be after-dyed with medium shades. Attempts to dye too light a shade will result in the goods having a speckled appearance. There are difficulties even with black-dyeing as some of the hairs are apt to show white points after dyeing. Wools that present this difficulty should rather be dyed dark grey and pumiced.

There are also dusty and strawy residues which, together with better wool from the cleaning apparatus of the carding machine collect under the latter. These are freed from straw and vegetable debris, and then mixed with ordinary raw material for carbonization. The carbonization should be done after milling and washing, and not while there is much grease and dirt in the wool.

Another kind of residues, which must be well cleaned before being mixed up with ordinary wool, is the stuff from the rollers of the carding machine where it gradually fills up the spaces between the teeth. A collection of it is soon made by the repeated cleaning of the teeth. It contains 50, 60, or even 80 per cent. of sand and grease, so that it may not yield more than 20 per cent. of usable material. Yet what it does give is valuable and finds a ready market. It is cleaned in many different ways. Fuller's earth is still used for the purpose, and is still one of the best methods. With care, water-glass and soda will give equally good results. Dry-cleaning is also a most excellent method with these residues.

For medium class goods, the admixture of 15 to 20 per cent. of residues together with 10 to 15 per cent. of shoddy is quite admissible, and good hat bodies can still be made from the wool. These mixtures, however, require slow and careful milling at first, only milling fast at the finish.

POISONOUS SILK BLOUSES.

"The Lancet," the well-known medical journal, has recently examined a piece of silk that formed the sleeve of a blouse, which set up an acute irritation of the skin of the wearer. It was found upon analysis that the silk was loaded with 40 per cent. of oxides of aluminum and tin, with traces of arsenic, and our contemporary asks: Is it to be wondered

at that this silk should set up irritation? Whether this would be the case or not would greatly depend on the wearer, the sensitiveness of her skin, and whether she was suffering from cuts or flesh wounds. There are some people who could wear it without feeling any ill effects, while others could not do so without suffering irritation. Our contemporary utters a diatribe against the evils of "weighting," which it calls a fraud, and asks whether such things tend to the betterment of English trade, or whether this kind of thing is not answerable for English trade "going to the dogs," as it is said to be doing. Probably if "The Lancet" had prosecuted its researches far enough it would have found that the silk emanated from Germany, that favored land of protectionism, where all is good. We are happy to think that our English silk dyers are not so guilty of weighting as their German confreres. The weighting of silk is undoubtedly a bad practice, for, apart from the moral view of the question, it produces rottenness in the silk and makes it unfit for wear. The English silk trade would do well to set their faces against the practice.

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.

A. M. Morrison has established a new yarn mill at Dundas, Ont.

The Brandon Woolen Mills have put in a new and complete plant for the manufacture of yarns and blankets.

S. S. Clutton, manager of the woolen mills, Vienna, has received enquiries for samples of goods from Amsterdam, Holland.

A new boarding and livery stable will be established in Alex. McKay's woolen mills, Orillia, Ont. The machinery is being moved, but Mr. McKay has not decided where he will start up again.

The Elmira Felt Co. are installing a new 125-h.p. Wheelock engine, the old one not being powerful enough to run all the machines that will be required when work is started in the new part of the factory.

J. T. Wood's knitting factory, Rockwood, Ont., had a narrow escape from being destroyed by fire last month. The fire broke out on the exterior of the engine house and had made good headway when discovered. The employees, with the assistance of a few others, got the fire under control before much damage was done.

At Quebec, two young girls employed at the Montmorency Cotton Mills appeared recently on the charge of obtaining money under false pretenses. The girls, who had been working overtime, turned in their time checks punched for a longer period than they had really worked. Both girls pleaded guilty, but on their employers' recommendation, sentence was suspended.

In the case of Fox v. Slingsby an action for damages for the loss of fingers in a woolen mill, in Dunville, Ont., the evidence showed that the machine was a safe device for the work for which it was used, and that it was only by the plaintiff's own negligence that he became injured. The plaintiff sought to establish that the cause of his injury was the defective and slippery flooring in front of the machine,

causing him to slip and allow his hand to be caught in the picker. Verdict was given for the defendant.

The Brandon Times reports a meeting of the shareholders of the Brandon Binder Twine Co., at which President Walverton presided. The president submitted for consideration and urged the adoption of resolutions which would: 1. Change the name of the company to the Consumers' Co-operative Co., Limited. 2. Authorize the manufacture of twine, rope and bags. 3. Authorize the purchase and sale by the company of all articles needed by a farmer excepting dry goods and drugs. 4. Provide for the payment of dividends commencing with a 5 per cent. dividend next year and increasing this at a rate of 1 per cent. per annum until a 10 per cent. dividend were being paid. 5. Introduce the co-operative principle by paying at the end of each year the balance of the profits to the customers of the company in proportion to their purchases, 20 per cent. of the profits due to non-shareholders and the portion due to those who have purchased less than \$60 during the year to go into a guarantee fund to provide for the payment of the following year's dividend. It was decided to grant what the management asked for, and the resolutions were carried. An earnest effort will be made to sell more stock as additional capital is required, especially if the new departures are to be carried out.

The Edmonton Bulletin of the 13th ult. says: A proposition was laid before the city council at its Saturday night's meeting, for the establishment of a large linen factory in Edmonton, by Messrs. Dickson and Coulter. They agree to establish the plant immediately, the machinery alone to cost not less than fifteen thousand dollars. The factory proper will be built of brick and will be five hundred feet long by one hundred. Besides this, there will be a two-story frame office building. They agree to employ not less than forty hands to start with. The gentlemen interested have selected six acres of land near the river as the site. Here there is ample level ground for bleaching purposes and the site is handy to the river both for water and for shipping. In return for this the promoters of the establishment ask for a bonus and exemption from taxation for a term of years. It was pointed out that the establishment of such a concern at Edmonton would attract like industries employing a large number of hands. The Edmonton district was pre-eminently suited for the growth of the very best flax. It was already grown in large quantities and was of a quality second almost to none for the manufacture of fine linen. The soil in the Edmonton district is similar to that of Belgium, the finest flax-producing country in the world. The refuse from the manufacture of fine linen would lead to the establishment of a factory for the manufacture of twine, rope, and sacks. Mr. Dickson said that in his short stay in Edmonton he had made a close study of the conditions as they exist here, and expressed his opinion that the establishment of such factories at Edmonton, where cheap fuel was plentiful, would be a good success both to the promoters and to the town. Mayor Short and Councillors Heimbeck, Galagher and Fraser were appointed a committee to meet Messrs. Dickson and Coulter and make the necessary arrangements. At the close of the council meeting, a short meeting was held and it was unanimously agreed to grant a cash bonus of five thousand dollars and exemption from taxation for ten years for the operation of such a linen manufacturing establishment at Edmonton. Messrs. Dickson and Coulter agreed to the terms and the City Solicitor was instructed to draw up a by-law embodying these arrangements for submission to the ratepayers.

The Trent Valley Woolen Manufacturing Company, Campbellford, is running to its full capacity.

Some new machinery has been put into the Joseph Simpson & Sons' Company's knitting mill, Toronto.

James Randle's woolen mill, at Meaford, Ont., recently burnt, with an estimated loss of \$10,000, is now being rebuilt.

A storehouse of the Montreal Woolen Mills was gutted by fire on November 15th. The loss, placed at \$10,000, is covered by insurance.

Three carloads of machinery for the Colonial Weaving Company, Peterboro, Ont., have arrived. The work of installation is well in hand.

The Golden Fleece Woolen Mills, Almonte, are installing a new set of 60-inch cards, two 220 spindle mules and some new looms and finishing machinery. This mill was idle for a number of years.

The Strathroy Flax Mill Company proposes to build a mill in Alvinston, Ont., and ask its citizens to vote the free use of buildings and two acres of land as an inducement, says the Strathroy Dispatch.

The water in the river at Almonte, Ont., is very low, and if there is not a change before it freezes up, it will make matters serious for the woolen mill owners who depend upon the water for motive power.

Ezra Wissler, Salem, Ont., has leased the peg factory premises and water power connected therewith to a new firm, who purpose to manufacture shoddy. The present engine and boiler auxiliary will remain in the building.

The Edmonton Tent and Mattress Company have acquired a valuable corner site, in Edmonton, on which to erect a large tent, awning, spring bed, mattress and window shade factory. It will be completed early in the spring.

The Doukhobors in the Yorkton, Man., district, will erect four large manufactories next spring, including a felt mill, a saw mill, and a flour mill. There are now forty villages of Doukhobors, and in each village there are forty farms.

The flax mill at Alma, Ont., was shut down for one day last month owing to the force of men and boys refusing to work for the wages offered. Their demand was satisfactorily met by John McGowan, M.P., and operations commenced the following day.

The Guelph Worsted Spinning Co., Guelph, Ont., have ordered another shipment of worsted machinery from England, which they will install in their new mill. This company has been doing business in Guelph for three years. They have been in their new mill four months.

The Brandon Woolen Mills have recently put in a new and complete plant for the manufacturing of yarns and blankets, and are now in full working order. The new mill is equipped with all modern machinery. It will add materially to the importance of Brandon as a manufacturing centre.

The woolen mills belonging to James Cumming, at Norwood, Ont., were burned to the ground on November 20th. It was some time before the fire was discovered, and the flames had gained considerable headway before aid could be given. It is believed that fire started in the engine room. Most of the stock was saved, but all the machinery was lost.

Thirteen thousand eight hundred and twenty bales of hinder twine, valued at \$7,000, belonging to the M. J. Wilson Cordage Co., Chatham, Ont., have been seized by Inspector Haycock, as not properly marked, and are still held

pending action by the Department of Trade and Commerce. The minimum penalty to which the Wilson Co. are liable is \$20,000, the maximum, \$350,000.

The weavers of the Guelph Carpet Company went on strike the other day, owing to a misunderstanding which arose between the officials and themselves. The management endeavored to effect a change, which was not satisfactory to the weavers, hence the trouble. The strike involved twelve employees, and is a serious one for the company, as business is heavy and substitutes are impossible to secure at once.

W. J. Webster has established a woolen mill at Edmonton, and it is reported that in order to encourage the raising of sheep, large flocks have been brought into the country and sold at cost price to the farmers, a number of whom have flocks numbering as many as fifty or a hundred sheep. Two things that militate against the raising of sheep in the West are the damage done to flocks by coyotes and the expense entailed in housing them during the winter.

The Empire Carpet Co., of St. Catharines, has removed to Dundas, Ont., having purchased the building of the recently closed Canada Felt Co. The company have secured a loan from the town of \$10,000 for ten years, with fixed assessment at \$2,500 for ten years, free water, etc. They will employ fifty operators to start with. Their lines will be same as produced in St. Catharines, viz., wool and union carpets, art squares and Smyrna rugs. Part of the plant is now in operation, and the remainder is rapidly approaching completion. A stock company with a capital of \$75,000 is being formed, and the name will be The Empire Carpet Co., Limited.

The Canadian Gazette, published in London, England, says: Large numbers of weavers, mostly young women, drawn from the Ashton, Mossley, Manchester, Eccles, and Farnworth districts of Southeast Lancashire, are now emigrating to Canada, where promises of regular and remunerative employment have been held out to them. Women agents, acting on behalf of mill owners in Valleyfield and other manufacturing localities in Canada have been scouring Lancashire and Yorkshire manufacturing towns in search of women weavers willing to go out to the Dominion. In certain cases the passage money of the emigrants has been advanced them, and this will be deducted from their earnings when they reach their new homes.

The firm of Lucien Marcan, Brantford, which has been doing a considerable business in Canada in wools, tops, rags, and shoddies, is undergoing a change at the end of this year. Lucien Marcan himself retired from active partnership in the business two years ago, T. H. Jones and Arthur Gledhill becoming the active partners. These two gentlemen have been so successful that they are now in a position to carry on the business without the financial assistance of the founder of the firm, and having admitted their traveller, F. B. Hutton, as junior partner, will continue the business from January 1st, 1904, as Lucien Marcan's successors."

A visit to the woolen mills of Ryan & Goodland, at St. Boniface, would be a revelation to most people. The name of Ryan has been connected with the woolen trade since Manitoba was first settled. The first yarn ever made in the province was manufactured by them at Rapid City. When the Rapid City mill was destroyed by fire, Mr. Ryan built the mill in St. Boniface. The latest machinery has been installed, and nothing but pure Manitoba wool is used. In addition to yarns, tweeds of all kinds, including the old-fashioned homespun, are made, also flannels and blankets. This

business has been turned into a joint stock company, the members of which are John Ryan, of St. Boniface; Isabella Ryan, of St. Boniface; Herbert T. Goodland, of Winnipeg; Albert E. Lévy, of Winnipeg; Mrs. Ethel Hail Goodland, of Winnipeg.—Winnipeg Commercial.

The Sun Mills Mfg. Co., of Fitchburg, Mass., of which Peter H. Corr is president, and George T. Hoffman, treasurer, contemplate establishing a branch in Canada for the manufacture of cotton batting. Messrs. Corr and Hoffman have visited Toronto and will probably locate there. Mr. Hoffman found, on making enquiries, that the manufactured product was subject to a duty of 25 per cent., while the unfinished article came into Canada free. Colonel Corr, the other partner, will be able to get cotton batting just as cheap as the United States buyers, and when he ships it to Canada, the lower wages of this country will enable their firm to make it considerably cheaper than now for the Canadian market. It is proposed to employ 100 hands in the Canadian branch. The company in Fitchburg has a capital of \$95,000. The only large concern manufacturing cotton batting and wadding is the Dominion Wadding Co., of Montreal, which has a capital of \$200,000, and has a capacity of 35 carding machines.

Fabric Items.

The Ontario Neckwear Co., of Toronto, is desirous of locating at Brantford, Ont., on account of the great difficulty in securing girls for their work in Toronto.

The Smith & Barber Co., of Dundas, Ont., has amalgamated with the Double Use Glove and Mitt Co., of Chicago, Ill., one of the largest glove and mitt companies in the United States. The premises will be enlarged and the number of employees increased.

The Edmonton tent and mattress factory recently placed an order with a linen mill in Coal Island, Ireland, for four thousand yards of linen ticking. The necessity of sending to Ireland and waiting a long time for the goods will be obviated when the linen factory, now started in that town, is completed.

The Women's Art Association, of Montreal, have sent a varied assortment of exhibits to the Exhibition of the Women's Institute, in London, Eng. The exhibits, which are all made by Canadian women, include a variety of habitant homespun for men's suits and for dresses. The consignment also comprises a number of portieres and table covers in the habitant tufted work.

Cecil D. Danford, of Montreal, is promoting the establishment of a new blouse and shirt manufactory. It is expected that the new factory will be situated in Ottawa. A number of strong financial men in Montreal and Toronto are interested in the enterprise. Mr. Danford has lived in Montreal all his life, and is favorably known in the business community as a general agent.

Five hundred cotton cloth weavers struck at Burnley, Eng., recently, as a protest against what they called "The Americanization of the weaving industry." The employers proposed a reduction in the weavers' wages in consideration of relieving them of certain duties which would in future be attended to by extra hands, thus enabling the weavers to give their entire attention to their specialty. The strike is the first of the kind in the cotton districts of England.

The London tailors are trying to induce their customers to use colored material for evening clothes. Shades of blue, green, crimson, and plum, which look well by artificial light, and browns are worn. The King has done all he can to popularize knee-breeches, black stockings and shoes with buckles for dinners and evening parties. Wherever he goes they are compulsory. Tight-waisted, double-breasted overcoats with bold lapels, are being worn by dressy Londoners, chiefly in grey. The craze for "loud," fancy waistcoats continues.

Souvenir handkerchiefs made from pure "Mississippi silk" will be given free to each person who visits a certain Mississippi exhibit in the Palace of Manufacturers at the World's Fair. A complete textile plant, operating six looms, will be installed in the magnificent World's Fair palace. The students from the Agricultural and Mechanical College, of Starkville, Miss., will manipulate the machines, and the "foreman" will be one of the college instructors. Raw cotton will be taken before the visitors' eyes, and when run through the machines will emerge in various forms of textiles. There will be plain domestics, checks and plaids. The famed red bandana handkerchief, made from cotton grown in Mississippi, is sure to have an added value when the visitor can say that he saw the handkerchief actually woven at the World's Fair. The entire output of this model factory will be given away as souvenirs.

PERSONAL.

The death is announced at Hespeler, Ont., of Arthur Mee, late overseer in the R. Forbes Co.'s woolen mills.

G. C. Emerson has sold out his interest in the Emerson-Hague Mfg. Co., tent manufacturers, Winnipeg, to Thos. Meredith, who becomes president of the company.

Robert Wilson, assistant superintendent of the Perth Knitting Mills, died on November 22nd, from pneumonia. Deceased is survived by a widow and three children.

F. B. Rollinson, who was succeeded by J. L. Jackson, as superintendent at the Paton Mfg. Co., Sherbrooke, is now superintendent and manager of the Wakefield Mfg. Co., Wakefield, R.I., in which he is interested financially.

Foreign Textile Centres

Manchester.—The market has shown few changes in either yarn or cloth. A steady feeling has prevailed and a generally healthy tone has been experienced. The chief feature is perhaps the increasing engagements of producers. Buyers are finding fewer irregular places amongst sellers. Both spinners and manufacturers are getting heavier order lists, and this is fortifying them against low offers such as were current a few weeks ago. There have been more looms started this week. In some districts overtime has been worked in the preparation department in order to fill the looms with beams. Home trade American yarns have been steady and unchanged, but spinners' order lists are increasing. The margin is poor, but if cotton has to come down it is thought that spinners will benefit by the decline. The export section is fairly busy. Bolton spinnings are quiet and unchanged, with no fresh feature of interest. American cotton has shown few important changes.

Bradford.—Trade very quiet. More hands out of employment than for a long time. Chamberlain followers say six months of markets like the present and manufacturers will

be heart and soul for retaliation against America, France and Germany.

Blackburn.—A few more looms are running, but the orders scarcely warrant the prices at which they have been accepted.

Huddersfield.—Little new trade. Woolen manufacturers are still fairly well placed with orders. The worsted trade, however, is dreary, with very few orders. Wools were quiet.

Leicester.—Rather more new business, but the bulk of contracts at low rates. The yarn market was irregular.

Kildermister.—Local demand for yarn quiet. Travellers report there is an inclination to put off buying as long as possible.

Rochdale.—New business small. Curtailment of production still goes on, a very unusual course for this time of the year.

Leeds.—Wool market far from active, as producers only covering pressing requirements. Clothing factories lack orders and many operatives working short time.

Kirkcaldy.—Position of linen industry continues to cause much anxiety. The scarcity and high price of flax, also cotton, interferes with business to the extent that there is little doing.

WEAVING WASTE.

The question of waste in the manufacture of woolen goods is one of vital importance to the manufacturer, and worthy of his careful consideration and constant attention. There is a peculiar interest attached to this question in connection with the work in the weaving department, because the amount of waste made in weaving is more largely influenced by the discipline of the operatives employed than is the case in the other departments of the mill; and also because the value of the material is greater in this department than in either the carding or spinning, the other departments that contribute most largely to waste production. In this connection it is also important to remember that the expense of rendering weaving waste available for future use is greater.

Not only does the labor cost in each department add a corresponding value to the material as it goes forward, and consequently of greater value here than in the earlier processes, but it represents the best part of the material. In the carding, the waste produced is largely composed of the poorer portions of the wool, being heavily loaded with dead fibres and dirt, which are of little or no value, and the elimination of which is of real value to that remaining. The yarn from which weaving waste is made is therefore better in quality than in its original mixture, and has been enhanced in value by the expense in labor to produce it, and all that can go into the cloth will be still further enhanced in value, while that which is wasted at once depreciates, often to the amount of more than 50 per cent.

Wool that costs 28 cents in the clean state might in some finer members of yarn reach a value of 60 to 72 cents, while it is doubtful if the waste produced from it would bring more than 24 cents. At this figure it would stand at a cost of 28 cents, when properly garnetted, a figure which will procure very good shoddy, and but a little more than half the value it represented when on the bobbin.

When looked at in this light, it appears surprising that the subject is sometimes given so little attention in the mills. The fact is, the responsibility is too often misplaced, and the weaver is blamed, when the fault is in the laxity of

the management. To be sure, the weaver makes the waste, and whatever portion of it is unnecessary must be largely due to his or her methods; but he is not responsible for his methods being allowed. What seems to be his carelessness may be due to the need of better discipline or system to avoid the trouble. It is a question whether the most intelligent weaver ever stops to think that the yarn which he so thoughtlessly pulls from the bobbin to throw into the waste-box, is thereby reduced 50 per cent. in value. He is usually paid for his labor by the yard, and there is always a tendency to overlook other interests, and to sacrifice them to his own advantage, especially if he is not restricted by proper discipline.

The habit of changing shuttles before the bobbin is empty, and, in the case of box work, of changing two or more to save the trouble of stopping the loom again, when only one of them is sufficiently reduced or run out, proves to the interest of the weaver so far as production is concerned. It also relieves him somewhat from the close attention required to watch each bobbin, and for seeing that the weft runs out before changing. It is sure, however, to produce unnecessary waste and corresponding loss to the mill. How this habit can best be checked is a question that presents itself to the manager of a weaving shed.

Some mills have adopted the method of limiting the weaver to a specified amount of waste per day or week, imposing fines for any excess of the amount. This method has never proved successful, as it creates a bad feeling among the operatives, and offers a temptation on their part to destroy evidences of their carelessness; and the waste floating down the stream has evidenced the desire of some to try to appear within the limit at an additional expense to the manufacturer.

Then, again, this method is likely to prove unjust, as the really conscientious weaver with bad work might have to suffer the penalty in spite of his best efforts, while the dishonest and unworthy one would find a way to evade the consequences of his carelessness. It is quite impossible to say what amount of waste per loom would be permissible, as it depends largely upon the class of work and the quality of the yarn used. As a rule, the lower the grade of work, the greater the percentage of waste. The following is the report of results showing the average in two first-class mills on entirely different work that shows something of this variation.

One mill is running on a low grade of fancy goods, with perhaps an average of 15 per cent. of wool and the remainder shoddy, with yarns ranging from 10 to 20 skeins (Yorkshire), while the other uses all wool, chiefly on white work, with yarns ranging from 20 to 40 skeins—an average of about 30 skeins. In the former mill the amount of weft waste per loom is 5.62 lb. per week, while in the latter it amounts to only 1.52 lb. per week.

The mill referred to as making 5.62 lb. per loom is running 52 looms, and by figuring the amount of this kind of waste for one year, upon the above basis, we find it amounts to 15,196 lb., which at an estimated value as low as 26 cents per pound for the material made into yarn, amounts to \$3,847.30. The depreciation of at least one-half, by its conversion into waste, amounts then to \$1,923.65. Now, if this is the result of fairly good management, as it seems to be, it may readily be seen what a source of leakage would follow an excess of waste in a medium or large-sized mill; it is not unreasonable to suppose that the waste question has often had quite an influence for evil in many mills.

The mill on the all-wool work is making a very credit-

able showing in this matter, and the man in charge at the mill working low material says he could not reduce the average except at the risk of a loss in production or the danger of the weaver's destroying the waste as a result of too much hounding on the subject.

Even upon the same class of work there are often conditions which cause a variation from the different looms, and while it may not be policy to set a limit for the weavers, it is certainly worth while, in striving to correct abuse, to keep a record of the result from each loom, in order to draw fair and intelligent conclusions regarding the work of the individual weaver. Where it seems that the amount of waste is excessive, it will be best to watch the weaver's methods, to ascertain whether he is at fault, and if this is found to be so, it can best be remedied by correcting him at the loom, catching him in the act, rather than criticizing blindly the result of his week's work. In the latter case he would certainly offer an excuse, while he could not dispute the evidence when presented before his eyes.

The average weaver is not reputed to be more conscientious than the common run of men in other vocations, and if his reputation is to be in any measure determined by the amount of waste found in his box at the end of the week, it might in some cases result in some sort of sleight-of-hand to deceive the overlooker, and possibly prove an injury to a more conscientious weaver on the same kind of work.

The overlooker, who knows from week to week the amount of waste made by the individual weaver, as well as the average, will be able to estimate very nearly what the result of honest endeavor should be, and also readily determine where to look for the abuses. When corrected right at the loom, there will be little chance to evade responsibility, or to shoulder it on to a neighbor. When each weaver understands that the overlooker is observant of his methods, as well as the weekly results, there will be a constant tendency to seek approval by honest rather than unfair methods. By a constant feeling that justice will be done, there will be a growing tendency towards better methods and desirable results.

In justice to the weaver, however, it may be said that oftentimes he is not wholly responsible for excessive waste. The condition of the yarn when it comes from the spinner is often responsible for much of the waste that is made in the weave room. Imperfect yarn, bad building of the bobbin, and soft bobbins caused either by inferior material, imperfect mixture, or neglect in the carding or spinning room, often lead to the accumulation of weave room waste, despite the best efforts of the weavers, and all these matters should be taken into account and corrected at the right place.

In this connection it may be said that the weavers should be taught to lay aside such bobbins as are likely to cause trouble, not only that the overlooker may know the true condition of the work, but that they may be rewound if expedient, and thus avoid the necessity of consigning them to the waste. When the weavers are taught the true importance of this question, and feel they are individually under the watchfulness of the overlooker, and that care in the matter is as important as production, it will be easy to continue the discipline.

Of course the overlooker cannot watch all the weavers at once, says the "Textile World Record," but an occasional correction at the right time will give the weaver the impression that the overlooker is not asleep, and that the man will be judged by his efforts to give the mill the best results of his energy.—The Textile Manufacturer.

THE GERMAN SURTAX.

An order-in-council has passed confirming the provisional regulations adopted for customs entries under the German surtax. There are no changes in the entry forms, but a clause of considerable interest is added to the regulations interpreting the second paragraph of the surtax rules, which says that "Such surtax shall also apply to any article imported into Canada when the chief value of the article was produced in Germany, although it may have been improved or advanced in value by the labor of another country, notwithstanding the provisions of the British preferential tariff."

The explanatory clause says that "In determining whether or not any article imported into Canada, which has been produced, improved or advanced in value by the labor of any country, other than Germany, is subject to the surtax by reason of a portion of the value thereof having been produced in Germany, a fair market value of the article or material grown, produced or manufactured in Germany, which has entered into the manufacture of the article imported into Canada, shall be held to be produced in Germany within the meaning of the tariff act respecting the surtax. The following are practical illustrations of the working out of the above:

"(1) Take the case of neckties made in Great Britain or in any other country from silk fabric manufactured in Germany 'out of materials produced in Germany or elsewhere.' If the fair market value of the silk fabric as sold by the exporter in Germany to the importer in Great Britain or other country, represents more than fifty per cent. of the value of the necktie in condition ready for export to Canada, the necktie would be subject to the surtax.

"(2) Take the case of hosiery made in Great Britain or in any other country from hosiery yarns spun in Germany, from wool produced in Germany or elsewhere. If the fair market value of the hosiery yarn, as sold by the exporter in Germany to the importer in Great Britain, or any other country, represents more than fifty per cent. of the value of the hosiery in condition ready for export to Canada, the hosiery would be subject to a surtax."

The new regulations also contain the following provision: "It is provided that invoices of all goods imported into Canada under the preferential tariff must bear a certificate signed by the exporter that the chief value of none of the articles included in this invoice was produced in 'Germany.' Invoices of goods from all countries must also bear a certificate to the same effect, with the clause added, 'Save and except all articles opposite which the word "Germany" is written in the invoice.'"

In order also that goods which have been only finished in Germany may not escape the surtax, collectors will have this example before them: "Take the case of velveteen dyed and finished in Germany, from materials woven and produced in another country. Such dyed and finished velveteen, when imported into Canada, would be subject to surtax, as a manufacture of Germany."

STENCIL PRINTING OF TEXTILES.

Many endeavors have been made to produce patterns by means of stencils and by the use of powdered pigments, but no commercial use of any of these processes has hitherto been found practicable. Jacques Cadgene, of Zurich, has patented a spraying process, which he claims, will produce any kind of pattern, rainbow, polychrome, monochrome, etc., satisfactorily. His process consists in printing on to the

fabric the well-known mastic reserve, and then spraying on the colors by means of steam or compressed air. The cloth thus receives the color on every part unprotected by the greasy reserve. At the close of the operation the mastic is dissolved off with benzine, leaving the pattern. It is evident that the spraying jets may have a number and arrangement corresponding to the pattern to be produced, while in the former methods of using the reserve, when the printed fabric was dipped into a dyebath, only a monochrome style was possible. When the mastic is dry the colors are sprayed on, and after four or five hours' drying, the mastic can be dissolved off. Two baths of benzine are usually necessary for this, and leave the pattern showing up in sharp contrast to the white ground formerly reserved by the mastic. The spraying is done automatically in a special machine, but the mastic is printed on in the usual way either by hand blocks or by rollers in a machine. —The Dyer and Calico Printer.

GERMAN COLONIAL COTTON.

Following the example of the British Cotton Growers' Association, the German Colonial Association is seeking to make Germany independent of the American cotton supply, by the establishment of cotton plantations in the German colonies. The society is sending a number of young men to Texas Agricultural and Technical schools to study the methods of growing and marketing cotton. They will spend a year on a cotton plantation and so acquire practical experience which they will later employ in the German colonies. The students will sign a contract to spend a number of years in the service of the German Colonial Society for the purpose of introducing the growing of cotton after the American system. The enterprise is the outgrowth of a suggestion by the German Consul at Galveston, who undertakes to make arrangements for the preparation of the students. The society has just sent a Texan, named Becker, to Dar-Es-Salaam, in German East Africa, to find new locations adapted to cotton growing. The latest reports from German East Africa indicate that interest in cotton growing is spreading, and that many new communities are engaging in the industry.

NEW INCORPORATIONS.

The Eclipse Whitewear Company, of Toronto, Limited. J. B. McCarter, J. B. Hutchins, and G. F. Beer, of Toronto, Ont. To manufacture and deal in apparel and piece goods of all kinds and in the machinery, materials, ingredients, utensils, and appliances necessary or appertaining to such manufacture, goods and business. Capital, \$150,000.

The Reliance Knitting Company, Limited. A. J. Moreland, of Toronto, and others. To manufacture and deal in textile fabrics, including knitted and woven goods. Capital, \$10,000.

The B. and I. Bias Filled Corset Company, Limited. J. D. Belcher, of Toronto, and others. To manufacture and deal in corsets and ladies' furnishings and whitewear. Capital, \$100,000.

Wanted Traveller for Dyestuff and Chemical House.

Territory—from Ottawa East. Good salary for experienced man. Apply, stating experience and salary expected, "TRAVELLER," care of Biggar-Samuel, Limited, 24 Fraser Building, Montreal.

WOOL MARKET.

The sixth series of the colonial wool sales opened in London on the 24th November and continued until December 2nd. The attendances were large, and competition was animated. Fair grades showed a hardening tendency. Home buyers were active. Americans did not operate during the series. When the series opened merinos sold unchanged to 5 per cent. below the September average. This level was maintained throughout the sales. There was strong competition for the better classes of the staple, and at the close prices were firm. Fine greasy crossbreds opened 5 to 7½ per cent. lower, subsequently hardened and finally ruled unchanged from the September average. Medium crossbreds fell 7½ per cent., and coarse 10 to 15 per cent., and continued to sell on the same basis. The depreciation in scoured was less pronounced. Cape of Good Hope and Natal fine grades were unchanged from September, but inferior stock was 5 per cent. cheaper. During the series 42,000 bales were sold to the home trade, 38,000 to continental buyers, and 5,000 were held over. The following were the closing prices:

New South Wales—Scoured, 8½d. to 1s. 9d.; greasy, 6½d. to 11d.

Queensland—Scoured, 1s. 2½d. to 1s. 9½d.; greasy, 6½d. to 10½d.

Victoria—Scoured, 5½d.; greasy, 8d. to 10d.

South Australia—Greasy, 6d. to 10d.

West Australia—Scoured, 1s. ½d. to 1s. 4½d.; greasy, 5½d. to 10d.

New Zealand—Scoured, 6½d. to 1s.; greasy, 6½d. to 1s. ½d.

Cape of Good Hope and Natal—Scoured, 9d. to 1s. 5d.; greasy, 7¾d.

In Montreal, trade in the cloth mills still remains very quiet, several of the mills having been closed down, and others only running part time. The knitting mills continue very busy. There is very little change in the price of wools, the following being the quotations: Greasy, Cape, 17 to 19½c.; B.A., 30 to 40c., as to grade. In fleece wool, Ontario washed fleece, 17 to 20c., and unwashed, 13 to 14c. Nova Scotia washed fleece, 22 to 23c.; pulled wool, extras, 22 to 23c.; Northwest, 17 to 18c. The sale of a lot of 5,000 lbs. of Ontario washed fleece is reported at 18½c., f.o.b., at a Western point for Montreal account.

The Toronto market is steady, with not much doing. There is no change in prices, the following being the quotations: Pulled, super, 18 to 20c.; extra, 22 to 23c.; combing, 18 to 20c.; fleece, washed, 18 to 20c.; unwashed, 10 to 11c.

In Winnipeg the market is nominal.

PRIZES FOR BIBLE SOCIETY ESSAYS.

In connection with the centenary of the British and Foreign Bible Society, the Upper Canada Bible Society proposes to offer 100 prizes for competition among the pupils of the Public Schools for the best essays on the Bible Society—Its History, Work and Claims. All school children attending Public Schools may compete in this contest. The essays must not exceed one thousand words, and must be in the hands of the Chairman of the Committee, Rev. A. B. Chambers, D.D., 5 Oak St., Toronto, on or before February 1, 1904. The name, age and school of each competitor must be attached to the essay. The prizes will be Bibles, Authorized Version, Centenary edition, well bound. The names of

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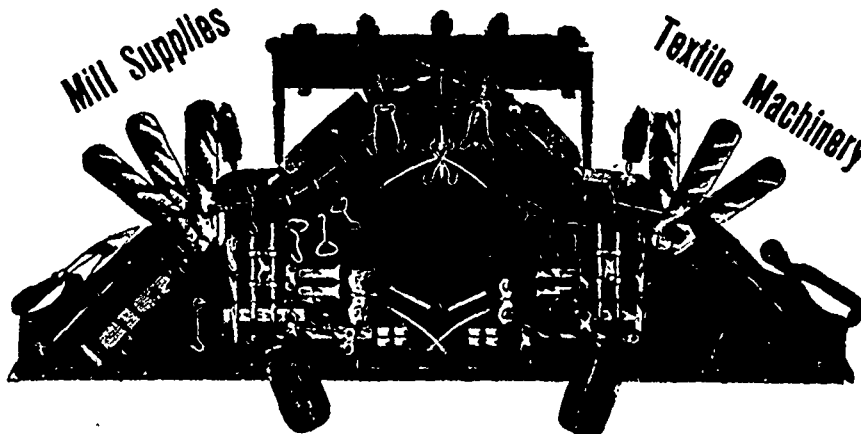
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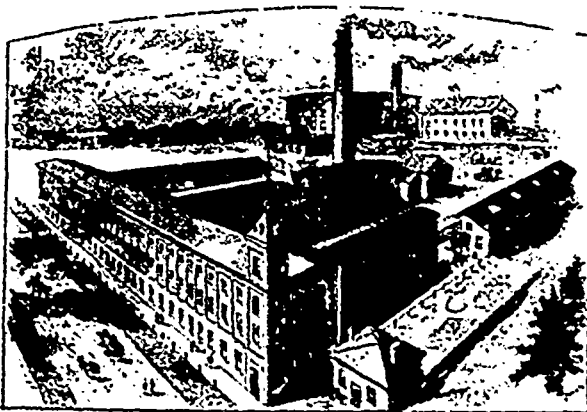
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Prices on Application.

Prices on Application

the winners will be announced at the Young People's Mass Meeting, in Massey Hall, Toronto, March 7th, 1904, and prizes will be forwarded to winners as soon as possible thereafter. The committee claims the right to publish any of these essays as they may choose.

Few persons, says the Indian Textile Journal, are aware of the enormous amount of hand-spinning that is done in India either with the distaff and pin or with the primitive wheel and spindle. The clothing of the inhabitants of the Himalayan regions is almost entirely of hand-spun woolen material, manufactured at the homes of the people. There has been made during the last few years a considerable effort to improve the domestic loom; prizes were given at the Ahmedabad Industrial Exhibition last December, and the Schools of Art at Madras, Calcutta and Lahore have taken an active part in promoting the use of the fly shuttle, but nothing, so far as we have been able to learn, has been done to improve the modes of spinning. The modern wheel is, fortunately, a very simple machine, far simpler than the native loom and quite within the skill of a native artificer. Most of the pieces are formed in the lathe out of moderately hard woods, and no metal is really required, bone or ivory being used for certain parts that in Europe are metallic. It is a pity that the interest of the loom should have eclipsed that of the spinning wheel, which bears an equal share with the loom in the economy of making cloth.

The Court of Review, in Montreal, has reversed the judgment of the Superior Court, in the case of Morris v. Brault, in a claim for \$85.20 by R. F. Morris, broker, of Sherbrooke, Que., against W. Brault, one of his clients, in connection with a cotton transaction which proved to be a loss. The defendant pleaded that the responsibility of a client is limited to the amount of the deposit on margin in the hands of the broker, and again, that the contract entered

into was a gambling transaction prohibited by law. The Superior Court maintained the plea, but the Court of Review, holding this case to be similar to the cases of Forget v. Ostigny, and Forget v. Baxter, decided by the Privy Council, reversed that judgment and maintained the action, giving judgment in favor of the plaintiff for the sum of \$55.20, with interests and costs of both courts.

CHEMICALS AND DYESTUFFS.

Navigation being now closed, prices on all heavy lines are higher. Sulphur advanced fifteen cents per 100 lbs. Caustic soda fifteen cents per 100 lbs. Bleaching powder twenty cents. Nothing much doing in heavy chemicals, this being the usual state at this time of the year:

Bleaching powder	\$ 1 60 to \$ 1 80
Bicarb. soda	1 75 to 2 00
Sal. soda	0 80 to 1 00
Carbolic acid, 1 lb. bottles	0 35 to 0 40
Caustic soda, 60°	2 10 to 2 25
Caustic soda, 70°	2 35 to 2 50
Chlorate of potash	0 09 to 0 10
Alum	1 35 to 1 50
Copperas	0 65 to 0 75
Sulphur flour	1 60 to 1 70
Sulphur rock	1 75 to 1 80
Sulphate of copper ..	0 06 to 0 06½
White sugar of lead	0 07 to 0 08
Sumac, Sicily, per ton	57 50 to 58 00
Bich. potash	0 7½ to 0 08½
Soda ash, 487° to 587°	1 25 to 1 35
Chip logwood	1 50 to 1 75
Castor oil	0 07 to 0 08
Cocoon oil	0 07 to 0 08

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DYEING SHEEP-SKIN RUGS.

Before the advent of the artificial dye-stuffs brush-dyeing was practised for small skins and fine rugs, and dip-dyeing for such skins as were used for rugs. The application of the new dyes required strong mordants and high temperatures. Both these requirements forbade the use of aniline dyestuffs for furs or pelts.

In order to obtain a skin with a colored fur but clear leather, the most primitive experiments were resorted to. After bleaching, washing, and dressing, the skins were stretched out upon wooden frames, and suspended over the bath, which was prepared as for wool-dyeing, and then lowered upon the surface of the liquid in such a manner that only the wool or hair dipped into it as close as possible to the leather, but not touching it. Tubs of uneven dimensions had to be used; as no boiling was allowed and the baths could not conveniently be stirred, they had to be very concentrated. The dyer had no alternative but to allow the frames on which the fur was stretched to stand upon the moderately warm baths for an indefinite time, until the fur absorbed some of the dyestuff.

The dyeing was naturally extremely slow and limited, as long as it was considered undesirable to dye the leather, too, and it was thought a sign of bad workmanship if there was a speck of color on the flesh side.

New processes of dyeing were then discovered which consisted not only in the application of a specially-prepared dye, but in the production of a dyestuff upon the hide of the fur itself, and with the invention of the chrome-tanning process went the discovery, hand in hand, that a dye containing chromium might be applied to fur by the dip-dyeing method, at a temperature up to 90 deg. C. without injuring the fur or the leather.

The dyeing of furs was, before this, almost exclusively effected by the use of extracts of dyewoods, because the affinity of the material for artificial dyestuffs is insufficient and the application of the high temperature which is required for them was prohibited by the sensitiveness of the skins to heat.

The firm of Leopold Cassella & Co., of Frankfort-on-Main, Germany, have now worked out a process of preparing fur skins by which the difficulties formerly existing are overcome and furs can be dyed in a simple manner with artificial as well as with natural dyestuffs. This process consists of a double treatment, viz., of tanning the skin with chromium, and subsequent chlorination of the fur. Heretofore these two methods were followed separately, but the intended effect is only produced by applying these reactions consecutively, as evidently this combined action causes a very different chemical characteristic of the furs from that of the separate single action. Even readily soluble tar dyestuffs can be completely fixed upon fur which has thus been prepared. The chromium tanning process may be variously modified in practice, and the treatment with chromic salt has been found to be most suitable. The new process may be illustrated by the following example. The alum and salt-tanned sheepskins, weighing about eight kilos, are wetted with lukewarm water, and for about one-half hour washed in a solution of 150 g. soap in 100 litres water, rinsed once and immersed in a bath of 100 litres water containing 50 g. chromium chloride, 100 g. basic sulphate of alumina, 100 g. common salt, and 250 g. acetate of soda crystals, until the skins are thoroughly penetrated. Then 100 g. more chromium chloride is added, and after remaining in this bath for twenty-four to thirty-six hours longer, the skins are rinsed and squeezed out. They are then, for a quarter of an hour, laid

down upon a bath of cold water containing one kilo hydrochloric acid per 100 litres, pressed off and entered into a cold bath of 100 litres water containing 100 g. chloride of lime and worked for twenty-five minutes, when 200 cubic centimetres hydrochloric acid is added, the skins worked for ten minutes longer, and returned to the first acid bath, to which half a litre more hydrochloric acid has been added. After working the skins for a quarter of an hour, they are rinsed in cold water, and to completely remove the last traces of chloride they are more rinsed at 30 deg. C. in a bath containing 300 g. sodium hydrosulphite, and finally three or four times in pure water, and hydro-extracted, when they are ready for dyeing.

The dye-bath is heated to 50 deg. C. and prepared with, say, 320 g. Alizarine Black 4B (4 per cent. of the weight of material), 20 g. (¼ per cent.), Orange ENL, 800 g. calcined Glauber's salt, and 400 g. acetic acid. After entering the skins the temperature is quickly raised to 75 deg. C.; after a quarter of an hour 80 g. bisulphate of soda is added and dyeing continued at the same temperature for three-quarters to one hour, when the skins are laid down in the bath and allowed to cool in the same, then carefully rinsed, hydro-extracted and dried.

The skins are then moistened in damp sawdust, and soiled as described in articles on fur dressing. The concentration and composition of the chromium solution and the degree of chlorination always depend upon the natural condition and the fresh tanning of the fur skin.

With this preparation of the skins, all coal-tar dyestuffs for wool may be applied, both by the brush and dip methods. As the chromium contained in the skins serves as mordant for most of these dyestuffs, no special mordanting is required and no special recipes for dyeing need to be given. The temperature of 75 deg. C. should not be exceeded, although in some cases it may be raised to near 90 deg. C.

The choice of artificial dyestuffs for fur dyeing presents no special difficulties, though not all furs take the dyes in the same manner, and the dyer must learn, by experience and observation, which colors are best adapted to the different furs. Some fur always dyes stronger on the upper part of the hair than near the root; others dye even from tip to root, and others again take the dye, although quite evenly applied to the entire skin, principally near the bottom. The longer and softer the hair the darker the upper part usually dyes, and the harder the hair the lighter remains the tips and the darker becomes the under part.

Chysoidine probably excels all other artificial dyestuffs in affinity to the fur hair; very small quantities of it give, without any addition, a fine clear yellow, resembling the shade of mink; greater quantities give a brilliant orange. All other basic dyestuffs dye up only to a limited intensity, so that dark shades cannot be dyed with them.—The Boston Journal of Commerce.

The Clarke Wood Company, Limited. Adelaide A. Clarke, George Wood, James England, Arthur Ash, and Alexma McGowan, of London, Ont. To carry on a wholesale millinery, mantle and fancy dry goods business. Capital, \$50,000.

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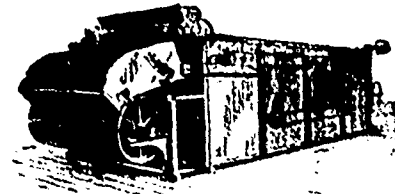
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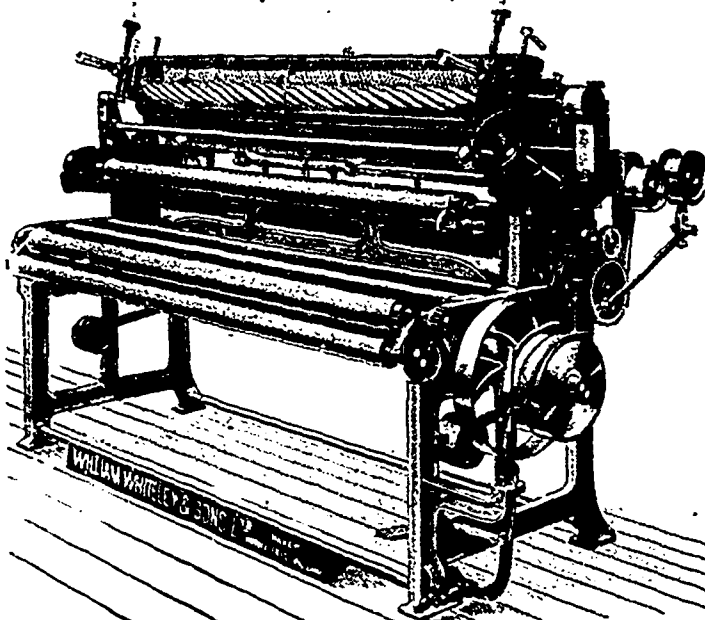
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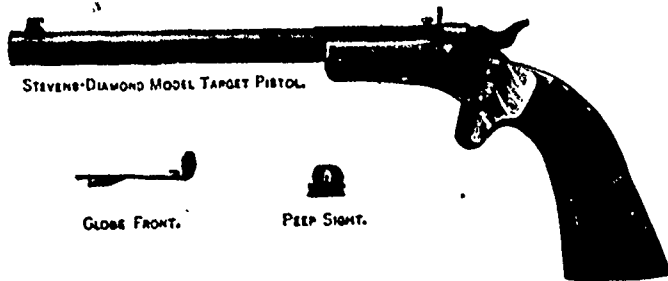
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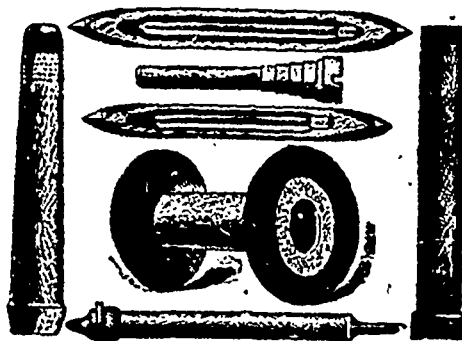
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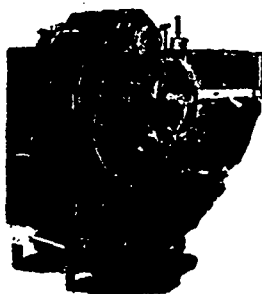
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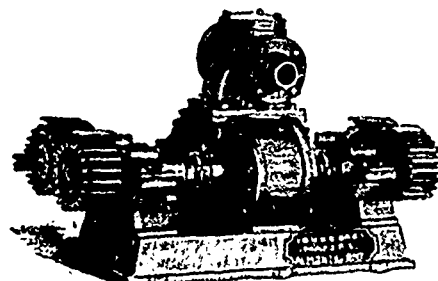
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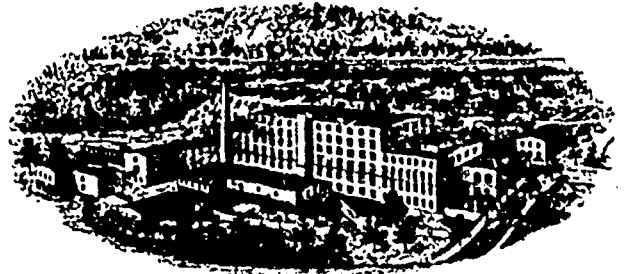
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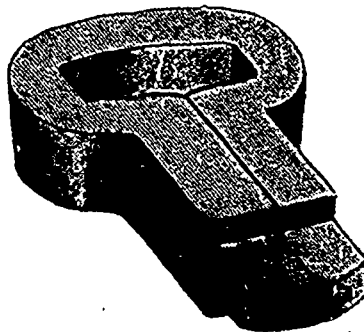
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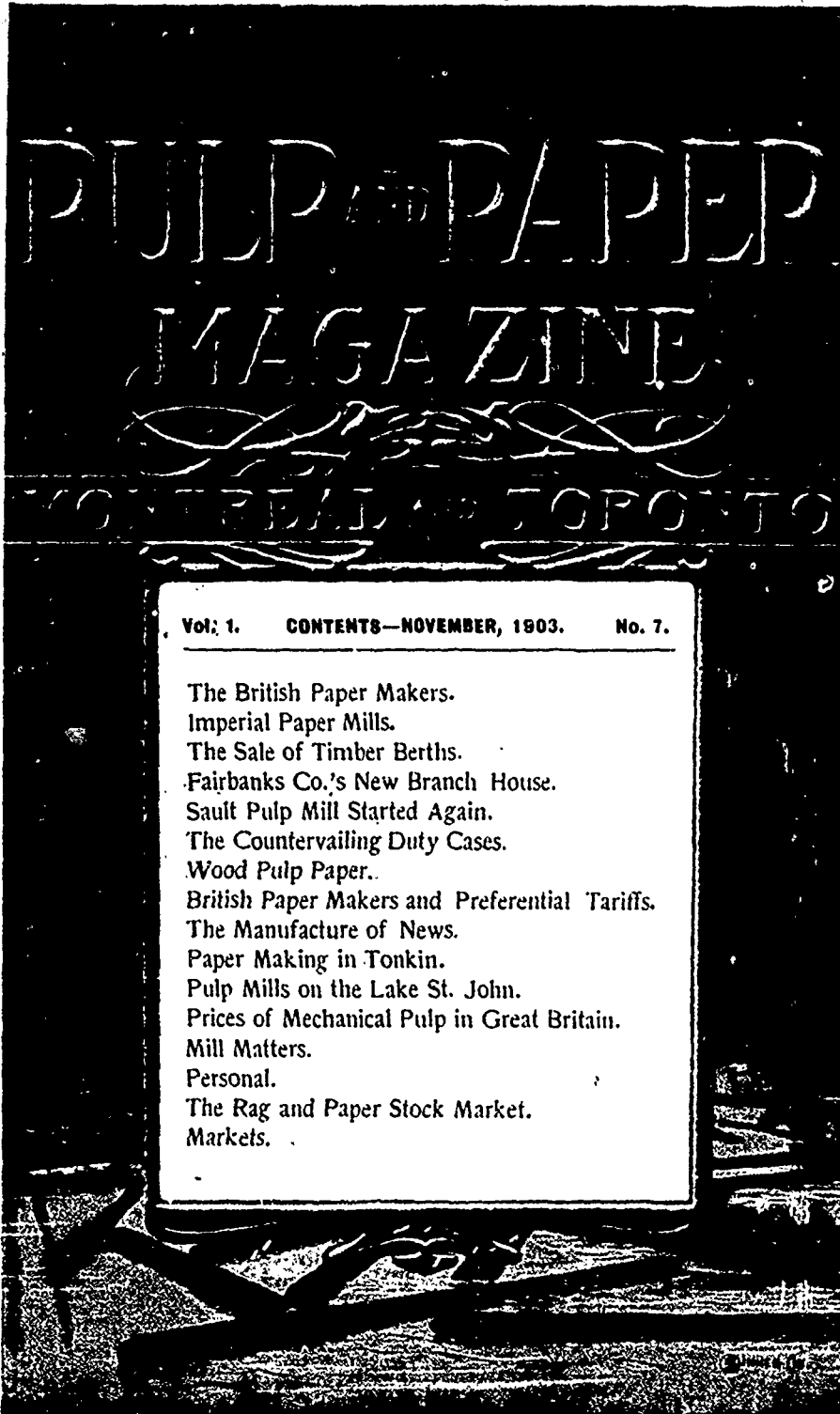
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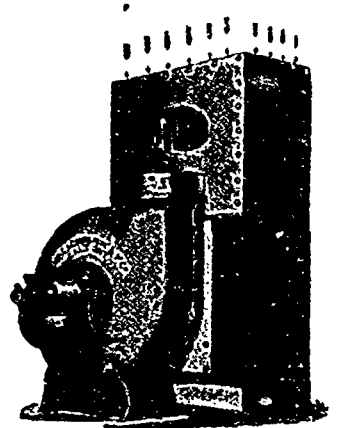
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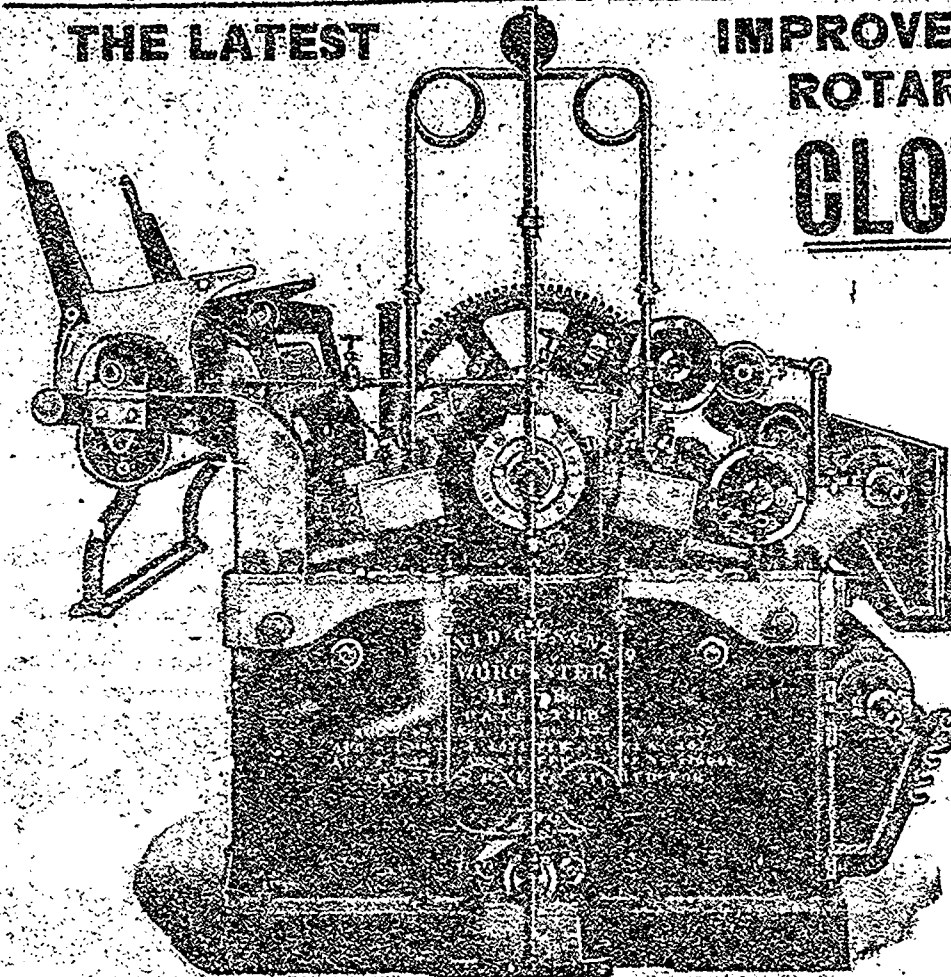
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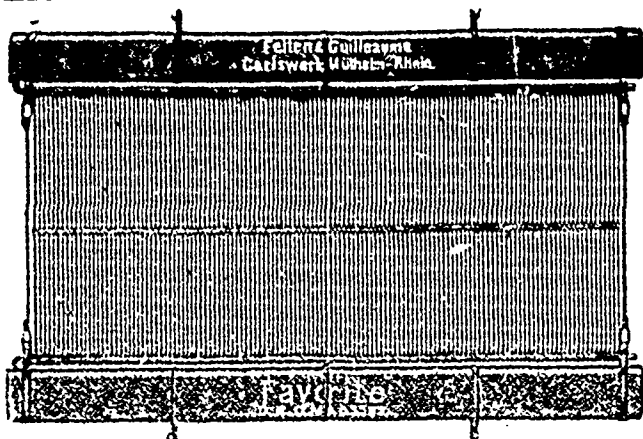
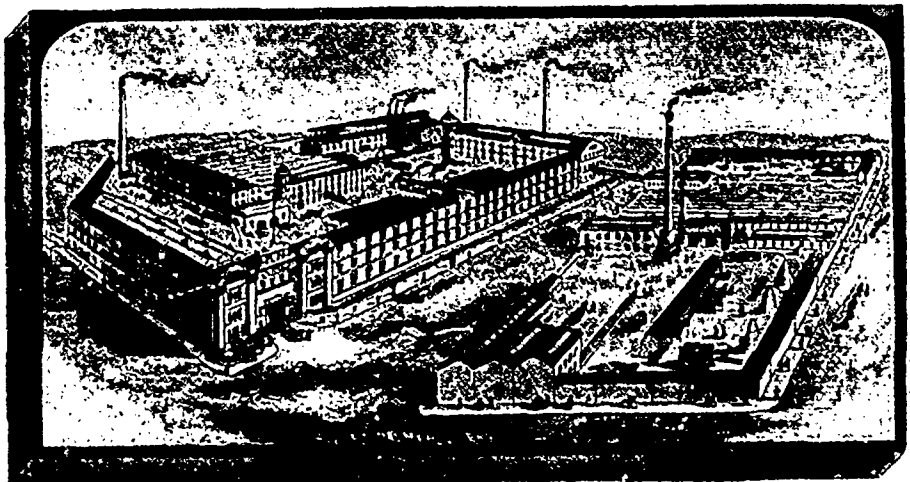
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