CANADIAN

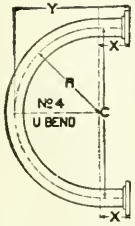
TEXTILE JOURNAL

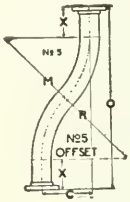
VOL. XXXIX Gardenvale, P.Q., January 17, 1922 No. 2

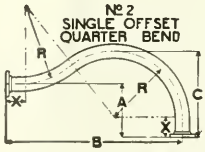
CRANE

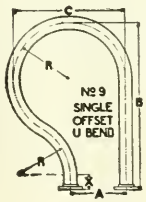
PIPE BENDS

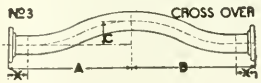
ARE THE STANDARD

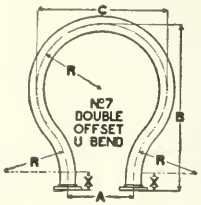


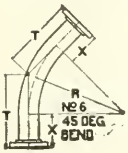


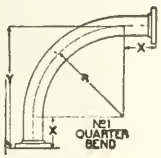












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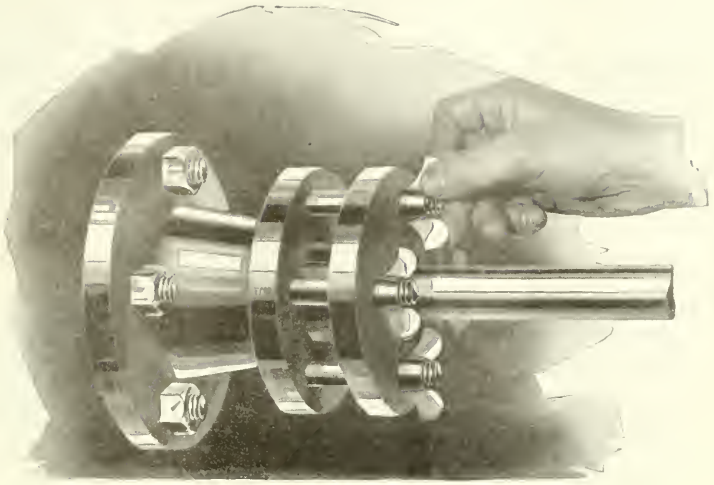

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CANADIAN TEXTILE JOURNAL

An Educational Periodical, published Fortnightly, for the dissemination of Technical Information, with a Commentary and Review of the News and Conditions of the Textile Industry in Canada

VOL. XXXIX. GARDENVALE, P.Q., JANUARY 17, 1922 NO. 2

PRINCIPAL CONTENTS

Editorial.

Special and Technical.

General.

Published every other Tuesday by the Industrial and Educational Publishing Co., Limited, at the Garden City Press, Gardenvale, P. Q.

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The right is reserved to the publishers to reject matter furnished either for the advertising or the reading columns.

EDITORIAL

LIFE'S LITTLE WORRIES.

As we go to press, the strike which took place on the 7th instant, at the plant of the Garden City Press, Ste. Anne de Bellevue, where this journal is published, still continues. The circumstances leading up to the strike are made sufficiently plain in the correspondence between the publishers and the Montreal Typographical Union No. 176, which we publish elsewhere in this issue.

At the moment, this journal is, naturally, being produced under substantial handicaps owing to this occurrence. Accordingly, should it not reach its usual standard for a few weeks, we must ask the indulgence of our readers and advertisers and friends generally. There is the best reason for believing that, in a very short while, the difficulties, at present attendant on its publication, will have been completely overcome.

THE INDUSTRY'S OUTLOOK

In all industries the question, "How about the coming year?" is being asked today. In many branches of the industry, the mills are now upon a normal basis. They are busy and have two or three months' work ahead of them.

With such as are upon that basis, it is a case of So far, so good. And particularly is that the case with the cotton mills. But there yet remain many problems to be solved before one can say with any degree of assuredness that the year ahead of us looks like plain sailing.

Foremost among such problems is the question of labor. We are not referring to labor in the textile mills which, on the whole, has accepted the reduced wage rates as being in conformity with the reduction which has taken place in the price of commodities. Indeed, speaking generally, labor has accepted the new rates of pay that circumstances have rendered necessary.

But in three cases, the question of wages is holding up the liquidating process which is an essential prerequisite to a great forward movement in all business—wages on the railroads, wages in the building trades, wages in the coal mines. It is not too much to say that today these form the main obstacles to a resumption of general industrial and commercial activity. The workers on railroads, in the building trades and in coal mines, claim for themselves what is, in the circumstances of the moment, nothing short of a preferred position in this matter of wages. The result is that freight rates do not come down as they should; in the building trades construction is being postponed wherever possible; and in the coal mines it looks as though the miners will keep coal out of line with other commodities, as regards price, as long as they can.

Not until the problem of wages has been solved in these three cases can any great forward movement in general business be expected. At the same time, while this is true, business has already found a basis on which it can expand in a moderate and conservative way. It is already improving, and indications are that, while all is not yet plain sailing, the present year will see many of the present difficulties adjusted. On such adjustment depends the prosperity of the textile industry and many other industries in Canada.

To bring prosperity to the textile industry, a considerably greater volume of business is requisite than that which sufficed in pre-war days. This fact is sometimes lost sight of, but, none the less, it is beyond dispute. During the war, most textile concerns, in common with most other manufacturing concerns, spent large sums of money in increasing the capacity of their plants. Old and more or less inadequate machinery has been replaced by new and efficient machinery. This new and efficient machinery, which has been installed in many plants, has a far greater producing capacity than that which it has replaced. It is necessary that a greater volume of business than in pre-war days should be done in order to keep this greater producing capacity busy and in order to make the expenditures necessary to its installation, a paying investment. Nearly every business in the textile industry has today to take care of greater overhead expenses than in the days before the war. Thus, as we have said, it is essential that a greater —a considerably greater—volume of business should be done.

Much of what we have just said applies to many other businesses besides the textile industry. A great, forward movement of business all along the line can be brought about if once the preferred classes of wage-earners consent to a proper readjustment of the inflated wage scales which, just now, are doing so much to hold all business back. In that movement the Government must bear its part. And, with a new Government in office, it should not be too much to expect that it will bring a new energy and enthusiasm to so highly important a task.

There are two directions, in particular, in which Governmental initiative and direction and assistance are vitally important. First the Government must encourage immigration of the right type and along well-considered lines. With the future of the country is naturally bound up the future of its vast railroad system. Whe-

ther this latter can be made a success or not depends upon the number of people who will settle in the huge districts it has opened up, and the extent to which our forests, mines and agricultural areas can be developed within the next few years. In settlers of the right stamp — settlers who will aid in the much needed development of the forests, mines and agricultural areas —we shall find not a source of competition with our industrial workers, but the market we need for the products of this greater volume of business which it is now necessary to turn out.

The other direction in which Governmental assistance is indispensable to business is in the development of our export trade. It seems probable that legislation in the United States will have the effect of shutting Canada out of that country's market to a very great extent. In that case, Canada will have to look for other markets for her products — particularly for those of our natural resources. For the extension of Canadian export trade we shall have to look mainly to Great Britain and other European countries, and it will be the province of the Government to foster and further such extension.

TOPMAKING IN CANADA.

There is no possible reason why Canada should not have a wool combing industry of her own. She possesses natural facilities for the operation of such an industry. And its possibilities in the way of profit and progress are literally immense. Yet more than seventy-five per cent. of the Canadian wool clip — some 10,000,000 to 12,000,000 lbs. of greasy wool — goes in the raw state to the United States. The Canadian trade includes all operations from spinning onwards, but heretofore has been entirely dependent for its tops on importations.

These importations are mostly from the United States, and thus some of the wool which goes to that country from this, in its raw state, finds its way back here in the form of tops. This condition, it may be mentioned incidentally, is not altogether peculiar to this country. It has been estimated that about eighty-five per cent. of the Australian clip goes to England, and some of this arrives in Canada in the form of tops. These yarns are bought and converted into the finished product by Vancouver users, and a large percentage of this latter is exported to Australia and the Orient. Thus part of the Australian clip eventually finds its way back to its country of origin, as a finished product, after traveling something like 25,000 miles!

We spoke, just now, of the natural facilities possessed by this country for the operation of a wool combing industry of its own. In this connection, emphasis may be laid on the fact that Canadian water is purer than Australian and power more abundant and cheaper here than in Australia. Further, climatic conditions are more suitable.

Experts from the old country fail to understand why such an industry has not, long ago, been established in this country. The wool produced in Canada is some of the finest wool in the world. In this country, too, the problem of manufacturing woollen goods, serges, tweeds, worsted, yarns, etc., of the highest standard, has been satisfactorily solved. But between the raw wool and the finished cloth there is a big gap which can only be filled by the establishment of a wool-combing industry to prepare the raw wool for the spinner and the weaver. Further, the value of its establishment as a stimulus to Canadian wool production—and it is a fact that there is room for great extension and expansion of sheep-raising in Canada, and particularly in the West—can scarcely be over-estimated.

In addition to the foreign wools used in Canadian knitting mills and other industries, it is estimated that, in the year 1920, over 6,000,000 lbs. of tops, noils, etc., were imported into Canada. Importations on this scale have meant a loss of large profits which should rightfully accrue to Canada and Canadians — profits for the farmers who produce the wool, profits for those who purchase it in its ultimate form, and profits for the investor in the wool combing industry.

As we have mentioned, experts from other countries are at a loss to understand why Canada has lagged behind in the matter of establishing an industry of this nature. No doubt, it may be said that a large amount of capital is requisite and that it would take considerable time to obtain the necessary special machinery. Further, there are those who hold that insufficient progress has hitherto been made in this country in the matter of grading. But these and kindred difficulties are very far from insuperable ones. An enterprise has been organized in Toronto for the erection of a large modern wool combing plant in that city. If adequately backed financially and wisely managed, it should play an important part in helping to remedy a condition which calls for remedy.

EDITORIAL NOTES.

Linen From Czecho-Slovakia.

Importers of linen from Czecho-Slovakia are experiencing a good deal of trouble with exchange just now. Although in sum total not nearly as large as the amount of business done with Belfast, some importers of Czecho-Slovakian linens have suffered in proportion more from the exchange than the hardship caused by sterling. Importations coming through from Czecho-Slovakia recently have cost importers in the neighborhood of 1.60 for exchange alone, when kronen was about .80 or .85, meaning a rise of almost 100 per cent. or much greater than the importers of Irish linens had to cover.

Cotton Crop Is Light.

The indications now fairly exact suggest a crop smaller by 2,500,000 to 4,000,000 bales than those of recent normal seasons, says a despatch from New York. The market has lately got in the way of setting this reduction over against the 7,000,000 bales "American carry

over", from the crop of 1920. But such comparison ignores the fact that the "carryover" even in normal year is 4,500,000 bales, and the government's "consumption figures" for the four months after last year's harvest estimated 1,200,000 bales more exported or taken by home spinners than in the preceding year.

Trade with Ireland.

A pamphlet recently issued by the British Tariff Commission shows that of Ireland's total exports of £176,000,000 in 1919, about £174,000,000 came to Great Britain, the remainder going direct to other countries. Of the imports in that year, 83 per cent. went from Great Britain, and 17 per cent. from other countries, mostly from the United States and Canada. More than half of Ireland's exports (53 per cent.) were farm produce, food, drink and tobacco; 43 per cent. were manufactured goods, and 4 per cent. raw materials. Of the manufactured exports of Ireland textiles, chiefly linen, constitute about one-half, and these come to Great Britain for the home market and for re-export. The report states: "The dependence of Ireland upon markets outside that country, and especially upon the markets of Great Britain, is further shown by the fact that the exports from Ireland in 1919 amounted to £39 per head of the population, while the corresponding figure for the United Kingdom was £17. Thus the prosperity of Ireland arises in a marked degree from its dependence upon Great Britain, for this percentage per head is the largest in the world."

BOWMANVILLE HAS LUCK.

After reading and hearing so much about Bowmanville's newest industry.—The Thomson Knitting Co. Limited. — citizens of that town were naturally interested in the announcement given out by this firm last week that the public would be allowed the privilege of inspecting the Factory in operation Saturday and Wednesday afternoons last, also this Saturday afternoon, December 10th.

Several hundred people from town and country visited the plant on the above days and without an exception those interviewed were greatly surprised and amazed at the large number of employees at work and the thriving activity shown in every department of the mill.

After making a thorough inspection of the factory one could not help but feel that Bowmanville has certainly made a lucky strike in landing such a substantial and busy industry. The complete Toronto factory equipment has now been brought here and is in full operation with the exception of a few machines which the machinists are now installing.

Considerable alterations have been made to the interior of the building. Hardwood floors have been put in, partitions erected, and the second storey made into one large room. A cement floor has been put in the old moulding ship which is now used for inspection, batch, drug, and board and dye rooms.

The process of manufacturing fine hosiery is particularly interesting and instructive. Starting at the yarn store house where the raw material comes in large boxes it is sent to the winding room where the yarn is put on cartridge shaped spools in readiness for the knitting machines. Some 236 knitting machines are in operation, besides several dozen loopers and sewing machines. Factory Superintendent Sugrue informed us that the spring needle machines used are the only ones of their kind in Canada and are capable of making the finest grade of silk hosiery. At present they are manufacturing cotton, worsted and mercerized hosiery for ladies and ribbed stockings for children.

The Thomson brand of hosiery includes Italian Silk French Silk Lisle, Paragon and Diana in fancy worsteds, for ladies and Leader, Jack and Jill, and Lama for children. Besides the above they also make hosiery for largest Canadian jobbers who use their own special markings.

The ground floor contains the main business office facing on Church St. The balance of the space is taken up with finishing room where hosiery is paired, stamped, labelled and boxed, also sample, stock and shipping rooms The boiler used by the foundry company has been completely over-hauled and is used for heating, steam for dyeing and drying purposes. Two cloak rooms are also on this floor with lavatories annexed.

Going into the dye house are found numerous big vate and dyeing machines, the hosiery goes from here to the boarding room were they are shaped and then pressed before being sent into the finishing room.

The capacity of the mill is 700 dozen pairs of hosiery per day. As the machinery is installed and the new operatives become efficient they are gradually working up to this capacity. In passing it might not be out of the way here to remark that Manager Wilson told us that they needed at least 40 more girls and married women to whom they were prepared to give employment. At present there are over 75 on the pay roll. We are also informed that a number of the employees coming from Toronto are shareholders in the company which shows that they have confidence in their own ability as well as in the company for whom they are employed.

The company now has on hand orders to keep them going full capacity up to June 1st next. We were permitted to look over the order sheets on hand which include such well-known wholesalers and jobbing houses as John Macdonald, Nesbitt & Auld, Gaults Ltd., Perrin, Kayser and Co., W. R. Brock & Co., Gordon Mackay Co., Greenshields Limited and others.

From casual observations the plant appears to be well equipped, operatives are skilled and the organization seems to be in a high state of efficiency.—"Canadian Statesman", Bowmanville.

JOHN CAMPBELL & CO.

According to the best market indications, Blues will soon be in large demand for Women's Wear as well as for Men's Wear. John Campbell and Co. are in a position to furnish a selected range of Fast Wool Blues for all classes of dyeing. They are Manufacturing and Featuring especially Aceko Fast Blue 2R and Aceko Cyanine 5R Extra. These colors are also known under the following designations: Coomassie Navy Blue, Buffalo Cyanine, Sulphon Cyanine, Buffalo Fast Blue, and Sulphon Acid Blue.

Strike at Garden City Press

Correspondence between the Publishers of the Canadian Textile Journal and the Montreal Typographical Union No. 176.

Editorially we make mention of the fact that there is a strike at the plant where this paper is published. The principles at stake are made clear in the following correspondence which sufficiently explains itself.—Ed.

The Union Ultimatum.

Montreal, December 17, 1921.

To the Board of Directors
Garden City Press:

Gentlemen:—

Notwithstanding the fact that the management of the Garden City Press has not at any time signed an agreement with this Union, it has nevertheless always conceded and operated under the terms of the contract made between the employing printers' associations and the Union.

One of the clauses embodied in all of these contracts is as follows: All employees of the composing room... shall be members of Typographical Union No. 176...

Previous to the expiry of the most recent of these contracts on June 30th last an effort was made to inaugurate the 44-hour week, and the Garden City Press was one of a number of offices where the shorter work week was then established. Because of the failure to procure this condition in other offices a proportion of our members was barred from working in these offices. Anticipating such a contingency the advisability of creating a defence fund was foreseen and an assessment of ten per cent. was levied on all earnings.

Advantage of the situation thus created was at once seized by certain parties to extend the activities of the National Catholic Syndicate to the printing industry, and four of our members of the Garden City Press were influenced into joining this Syndicate, and the reason or excuse given for their action was that they found it impossible to continue paying the said ten per cent. assessment.

Repeated attempts were made by the officers of this Union to dissuade these men from severing their connection with the I. T. U. and the President of the Garden City Press himself pointed out to them the inadvisability of their contemplated severance. Argument and persuation, however, were of no avail and apparently these men could not be made to see that they were refusing to support their fellow-members in an effort to procure what they themselves were enjoying. Investigation proved that in one case at least it was a repetition of history as the same trouble was encountered in the struggle for the 48-hour week. At that time, of course, there was no Syndicate into which to drift.

The argument that the action of these men was likely to disrupt the relationship existing between the management and the Union was likewise unheeded. The men evidently felt secure in their position and were callous to the results of their action on the other 75 per cent. of the employees in the composing room and on the management.

With set purpose of endeavoring to re-establish former conditions, and of maintaining, if possible, the friendly relationship, no steps were taken to withdraw the members of the Union from this office. Until Tuesday of this week, December 13th, there were excellent hopes that the situation could be adjusted, but on that day two other men were added to the composing-room staff who were not members of this Union, and it was then decided that as matters seemed to be getting worse instead of better, our members should be withdrawn.

As the result of an interview with the President of the Garden City Press, it was agreed that yet another effort should be made to adjust matters, and a request was made for a statement from the Union setting forth the minimum conditions under which an agreement might be reached, and that such statement would be placed before a specially summoned meeting of the Board of Directors. This statement is herewith set forth:

> That the composing-room staff shall be restored to its former standing and only members of the Typographical Union be employed therein; this to imply that the four men first mentioned above may re-establish their membership and the two men recently engaged be discharged or, should they prove to be competent printers, make application for membership.

It may be permissible to state further that we have, for the past three weeks, borne the railway expenses of our members who are travelling from the city daily, and this may be taken as an indication of our willingness to do our utmost to save the situation.

It is the sincere desire of the members of the Union that the previous cordial relationship between the management of the Garden City Press and the Union may remain inviolate.

Truly yours,

THOS. BLACK.

Montreal, December 31, 1921.

J. J. Harpell,
President Garden City Press,
Ste. Anne de Bellevue, P.Q.

Dear Mr. Harpell:—

Owing to developments in the situation at Garden City Press, and having regard to the fact that the action out of which the trouble originated, is not likely to be favorably adjusted, it is the opinion of the Strike Committee that our members can not longer be permitted to work under existing conditions. I have therefore to notify you that the members of this Union now working at Garden City Press will be withdrawn on the evening of Thursday, January 5th, 1922.

The situation can only be saved on the understanding that conditions immediately revert to those existing at June 30th, 1921—namely, all members employed shall be members of Montreal Typographical Union No. 176, and conditions of contract as verbally agreed to shall be observed.

Very truly yours,

2 THOS. BLACK.

The Publishers' Reply.

Gardenvale, Jan. 4, 1922.

Mr. Thos. Black,
President, Montreal Typographical Union 176.
Room 35, Herald Bldg.,
Montreal, Quebec.

Dear Mr. Black:—

The ultimatum submitted with your favor of the 31st, just received, comes as a great relief. It puts an end to a situation that is becoming intolerable.

So that there may be a chronicle of the facts leading

up to this condition, I will rehearse them here and if I make any statement to which you take exception please let me have your version.

Up to the 30th of June and for a month thereafter the relations between our company and your Union were most friendly. We were the first and the only large printing plant in the district of Montreal to grant a forty-four hour week; in fact, we gave it without being asked. We have always paid better than your scale of wages and working conditions in our shop are of the best.

All went well while our men continued their membership in your Union and submitted to the tax of ten per cent of their wages to support those of your members who were on strike from other shops that had refused the forty-four hour week. Your Union had given its members to understand that five weeks would be the limit of this tax and all our men here continued to pay to the end of and even beyond this period, but when your Union failed to keep its promise your working members began to grow restless and many of them, both here and elsewhere, dropped their membership. Some of the French members of your Union took out membership in the National Catholic Syndicate. At that time we gave your officials access during working hours to the men in our plant who had dropped their membership in your Union. In fact, we did what we could to help you persuade them to renew their membership. This we did against our better judgment: first, because we realized, as did your seceding members, that when a strike is allowed to drag on beyond a reasonable time it becomes increasingly difficult to secure a settlement in the interest of the strikers. Those who take the place of strikers become more and more efficient while men on strike suffer a lapse of skill and aequire habits of indolence and indifference that make them less desirable when they are ready to return to work. This is particularly true of men in receipt of such handsome weekly allowances as your Union has been paying its strikers.

Our second reason for feeling that your Union did not deserve the assistance we gave it in trying to persuade the men in this shop to continue their membership in your Union was supplied by your Vice-President, Mr. Hayes of Indiana, U.S.A., when he swore, at our meeting with him in Montreal at the Windsor Hotel, last autumn, a determination to "teach the Catholic Church a lesson" for what he interpreetd as their interference in labor matters. Whatever may have been Mr. Hayes' grievanee against the Catholic Church or any other church, we did not consider that we had any right to assist him to teach them a lesson.

When you failed to persuade your men to renew their membership by peaceful means, you appealed to us to use coercion by threatening them with dismissal. This we absolutely refused to do. From this time on there was a very noticeable persistent demand on the part of our superintendent here for more men, although there was no increase in our work. With the advent of every increase in our force there really seemed to be a decrease in the output and our costs began to mount until within a short time they had increased by 52 per cent. when the writer found he had to interfere. When the costs continued to go up we found it necessary to dismiss our superintendent. The next man we dismissed was a man on the night staff who was giving a production of less than 500 ems an hour, whereas the minimum, as you know, is from eight to nine times this, according to your own statement. At that time we felt we could not afford to reduce our force so the writer appealed to you for another man to work at night. Instead of one you sent two, a Mr.... and a Mr.... who, you claimed, were very rapid typesetters. The first night their work was fairly satisfactory but the second night they came out well supplied with liquor which they consumed between them and in company with our night pressman. The next morning we dismissed these two men and our night pressman, a man who had been with us for several years and who before that occasion had done his work and conducted himself satisfactorily. The next man we dismissed was a Mr...., an old man of 54 years, who, I understand, has been in the habit of tramping about from place to place and drinking very heavily, with the result that he is never in a fit condition to do a fair day's work. His largest production here in any one day was less than 1,500 ems an hour and some days he went down to below half that per hour. The next man we dismissed was a monotype operator whom we were very glad to be rid of. He did not earn his wages and in many respects was highly undesirable. The last man to go was dismissed because he either did not know his work or he loafed on the job. With all these dismissals we have a larger output today than we were able to secure with the larger staff.

What was very noticeable during the writer's interview with all the above mentioned dismissals was the very great readiness on the part of the men to go. There seemed to be a decided preference on their part to be on strike rather than to be at work. On more than one occasion men whom you have sent out here to look for work have refused a salary of $36.00 for a forty-four hour week and declared their preference to walk the streets and receive strike pay of $25.00 a week.

We are rather glad that the break is coming for another reason, namely that it will leave us free to handle our apprentices in the future in the way we think they should be looked after. The unreasonable regulations of your Union regarding apprentices have shut out the best class of young men and women from the business of type-setting and resulted in a rapidly increasing preponderance of old men in your organization. There is nothing more unsatisfactory than your regulation which limits a shop of the size of ours here to three apprentices in five years. And it was very annoying a few weeks ago when we took on the fourth boy in five years to have the head of your Chapel come to my office and request that he should not be allowed to go to work. In order to avoid trouble I acquiesced and the boy was sent away. We have many bright youths in this community who are anxious to learn the business of typesetting but they will be old men and women before the opportunity comes to them if we continue to recognize the apprenticeship regulation of your Union. Since we came out here we have been axious to start a school for apprentices and it is good to look forward to a beginning of this work.

I trust you have not been led to believe by the arguments presented above that we are in a mood to throw up our hands and quit. This we are not in the habit of doing until the last gun is fired in an effort to do our whole duty and we feel that we still have a duty to the members of your Union who have been with us here for years and who are satisfied with conditions here and with the fellowship of their co-workers who are now not members of your Union. They have to-day each and everyone signified their willingness to continue in our employ if a strike is not called.

As a final effort at an amicable settlement we have approached the Department of Labour at Ottawa with the request that they communicate with you in the hope of gaining your consent to the appointment of a Board of Arbitration and Conciliation for the arbitrament of the question on which you threatened to call a strike, in

your letter of the 31st. In order that they may have all the facts of the case we are by concurrent mail writing them as per enclosed copy herewith and sending them a copy of this letter, together with a copy of your letters of the 17th and 31st of December.

Yours very truly,

J. J. HARPELL.

Union Comments on Publishers' Letter.

Montreal, January 10th, 1922.

Dear Mr. Harpell:—

In your letter to me of date Jan. 4, in which you ask to chronicle the facts leading up to the present situation existing in your plant, you ask that if I take exception to any statement to inform you of same. I now avail myself of that privilege and would seek to correct some misstatements in the hope that the chronicle may finally appear strictly according to fact.

Referring to Paragraph 4 of your letter I must emphatically deny that this Union gave its members to understand that the ten per cent. assessment would not extend beyond five weeks. You evidently have been misinformed on this point.

In Paragraph 5 allusion is made to a conversation with Mr. J. W. Hays. I was not present at the time of the conversation but Mr. Whitaker and Mr. Gauthier inform me that what Mr. Hays did say was that "If the Catholic Church or any other church or any other organization sought to interfere in Labor matters the I. T. U. would teach them a lesson."

Paragraph 6 contains numerous statements that I am unable to refute or confirm. It would be difficult to adduce necessary evidence. Speaking personally I cannot recollect suggesting coercion. However, this is a fine point and does not materially effect the matter. In reference to the superintendent of the plant it is my opinion that Mr. Philip and myself were informed at the time that the superintendent of the plant had resigned and had asked that his resignation might take immediate effect. It was also stated that the superintendent had been requested to take two or three weeks vacation instead of resigning his situation. This opinion was confirmed by the superintendent on Saturday, Jan. 7.

Regarding these two operators referred to, I must say that two men were sent at the request of the management of the Garden City Press.

So far as their first night's work is concerned, the statement that their work was "fairly satisfactory" is not a generous statement, the work of one of the men that night was regarded as an extraordinary night's work. The second night's work was unsatisfactory and I sincerely regret the attested cause.

It is impossible for me to attach the blame for this supply of liquor.

So far as Mr....is concerned, he states that the condition of the machine was the cause for the small output. How far this is correct I cannot say. I believe, however, that an investigation will show that this particular machine is not in a satisfactory condition and that continual trouble is encountered with the electrical appliance.

On taking up the matter covered in Paragraph 9, our members inform me that none were willing to continue at the Garden City Press under existing conditions. Were former conditions to obtain they admit that they would certainly have been pleased to remain.

In reference to the suggested appointment of a Board of Arbitration, I have to state that: As it was a principle that was involved, and not hours or wages, the matter could not be submitted to a board. This was explained personally to the Minister of Labor.

In conclusion, let me say that the Union did not hastily decide its final action. Every effort has been made to have matters amicably adjusted and the final decision was come to only after mature consideration and much patience.

Might I ask that in the event of your chronicle being modified according to the explanation herein set forth, you will forward such to the Minister of Labor so that the previous chronicle may be withdrawn.

Yours truly,

THOS. BLACK.

Publishers' Rejoinder.

Gardenvale, Jan. 12, 1922.

Dear Mr. Black:—

Really I cannot see much, if any, difference between the account given in my letter of January 4th and that set forth in yours of the 10th instant, just received.

The statement about the five weeks was made in your presence by Mr.... and you did not correct it. But this is not a material point. The fact remains that the only reason given by your seceding members was that they refused to continue to pay the strike assessment your Union was levying.

As regards Mr. Hayes' statement, your version of it suits the reference made in my letter of the 4th.

The word "coercion" was my own, and used to interpret your demand that I should force the seceding members back into your Union by threatening to dismiss them. This was the cause of the whole trouble, for when I refused to dismiss or even to threaten them with dismissal, you called a strike.

The facts concerning the superintendent leaving were these. On Saturday, December 17th, I told him that matters were getting into such a condition that I would have to take charge of the work myself until things were adjusted and that during this period I did not want him around. If he would go away on a two or three weeks holiday the company would pay his expenses, but if he refused to do that he would have to hand in the keys on the following Monday morning. He handed in the keys on the following Monday morning.

I consented to two men because, as you will remember, you thought one might be lonely. As it turned out they proved to be jovial companions, particularly when they had a supply of liquor. I used the words "fairly satisfactory" because the production of these two men at no time was over 4,000 ems per hour per man, which is the minimum an average man might be expected to set.

The machine Mr.... used has been continuously operated since he left with satisfactory results.

I can only repeat that each and every one of those who went out from our shop when you called the strike told me they were well satisfied with conditions here and that they would not quit unless they were called out by the Union. Of course, the fact that they did continue to work right up to the time when the Union called them out is evidence in itself that that was the only cause for their quitting. They were free to go at any time they wished.

I consider your version does not contradict but corroborates the statements made in mine of the 4th.

Yours truly,

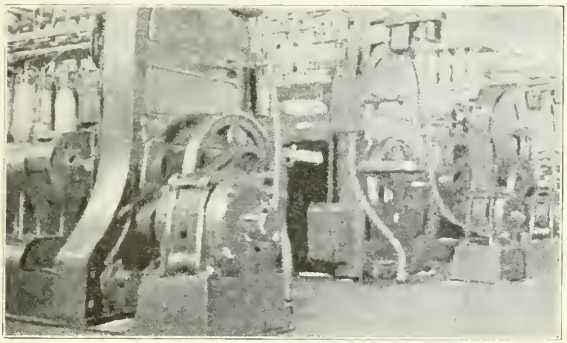
J. J. HARPELL.

Mr. John Irwin of McArthur Irwin Ltd. Montreal has been nominated for the Council of the Montreal Board of Trade.

Silent Chains In Textile Mills

By FRED L. BRYANT, with J. E. Sirrine and Co., Greenville, S. C.

For the cuts illustrating the subjoined article, which appeared in the Southern Textile Bulletin, we are indebted to the courtesy of Jones and Glassco (Registered), Montreal and Toronto, Canadian Agents, Morse Chain Company.—Ed. C. T. J.



Silent Chain Drives on Roving Frames in Textile Industrial Institute, Spartanburg, S. C. Chain drives are used on almost all the machinery in this mill. Individual motors on roving drives are now mounted on a bracket attached to the frame and shafts are in the same plane.

Coincident with, and as a vital necessity to, individual motor applications to textile machinery came the demand for a flexible drive on short centers; short leather belt drives were impracticable without some arrangement for automatically maintaining tension, direct connecting through a coupling required a moderate speed motor and would not permit of the speed changes which are often necessary. Gearing of the motor to the machine did not prove very satisfactory, as the vibration caused rapid wear of the gears and resulted in noisy operation.

This problem has been solved by the use of the so-called silent chain drive. The successful operation of individual drives in textile plants is due largely to this method of transmission and the application today covers a wide range of drives from ½ to 20 horse power motors on individually driven machinery and from 7½ to 50 horse-power motors on line shafting.

Silent chain drives permit flexibility in motor location, speed changes to be easily made by the substitution of a different size sprocket, require less attention and have longer life than belt drives, eliminate slip, giving constant speeds, are highly efficient and permit the use of high speed motors.

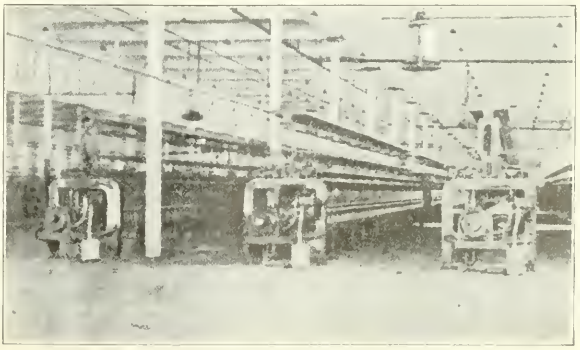
The application to individually driven machines permits the motor to be mounted on the machine and become an integral part of it. For line shaft drives the motor can be located in a position adjacent to the shaft and not removed to some more distant point required by belting, thereby avoiding the crossing of shafts, pipes and other obstructions. The driven wheel for line shaft drives is split which simplifies its installation.

Early installations of silent chain drives in textile mills were made with the motor on the floor at the drive end of the machines. This arrangement required a comparatively long chain as the drive centers could not be located near together. The motor base could not be maintained as rigid as this drive required, and consequently difficulty was experienced in keeping the chain in proper alignment.

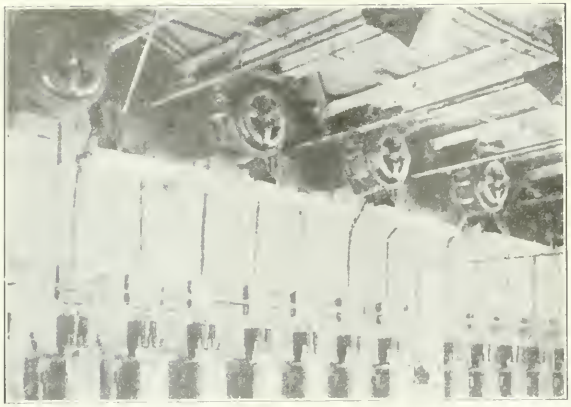
Drives with the motor mounted on a cast iron base attached to the machine were tried out at Duncan Mills, Greenville, South Carolina, in 1916. The drive centers were 4½ inches apart, the driver and driven shafts were in the same horizontal plane and the chains ran in an unsuccessful oil bath. While the life of the chains on these short centers was not very long it was clearly demonstrated that with some changes they could be made to operate successfully. This same arrangement of drives, that is, motor mounted on bracket and shafts in the same horizontal plane, is in use today except that the drive centers are now 9½ to 10½ inches and the lubrication problem much better taken care of.

There are now 2,013,638 individually driven spinning and twister spindles in Southern mills, and with the exception of about 150,000 spindles these are driven through silent chains. While chain drives are used chiefly on spinning frames they are being successfully applied to all machinery in textile plants where individual motors are used except looms, which are nicely taken care of by spur gearing.

A chart, Figure 1, shows the annual increase in individually driven spinning and twister spindles in Southern mills since 1907. A fair estimate of the num-



Chain Drives on New Twister Frames.



Electrification of an Existing Cotton Mill. Weave Room Line Shaft Drives at Pacolet Manufacturing Co., New Holland, Ga.; 20 30-H.P. motors drive 20 lines of shafting in this room through silent chains. Each line of shafting drives 82 36-inch looms, forty-one on floor above and forty-one in this room.

ber of chain drives on these frames today is about 7,770 and the probable total of all drives in textile plants is 8,300.

The size of chains required for any drive depends upon the amount of power to be transmitted and the chain speed. The variable in chain design are the pitch and width of chain and these are not standard for any given size as the pitch depends upon the width and vice-versa.

The center distance between driver and driven shafts for good practice is ½ the diameter of the driven plus the diameter of the driver sprocket. Correct tension in the chain is maintained by the adjustment of centers. Silent chains operate more successfully and have a longer life when chain speeds are kept below 1600 feet per minute.

For convenience in changing speed on driven machines above and below normal, the motor sprocket is generally made with about 21 teeth, allowing the future use of a smaller or larger number of teeth. With $\frac{1}{2}$ in. pitch chains and standard motor shaft dimensions about the smallest motor sprocket that can be used on a 7½ horse-power motor is 19 teeth. On individual machine drives the motor shaft is tapered and the driving sprocket is held in place by a nut and washer. The exchange of motor sprocket is quickly made.

It is advisable not to have an even number of teeth in the sprockets and links in the chain in the same installation, as the periodic repetition in contact will cause an uneven wear. Where the driver and driven sprocket have an even multiple of teeth, what is known as an offset coupler or hunting link is used to give an odd number of teeth to the chain. The standard chain being made in an even number of links, or two links to each section, the offset coupler or hunting link, composed of three links, replaces two or four links of a standard chain. It also facilitates the shortening or lengthening of the chain by a smaller amount than the standard two links.

It is very important that good alignment of driver and driven sprocket be maintained, for should these get out of alignment the chains will wear excessively. Even when proper alignment is maintained it is necessary to have some arrangement to keep the chain in correct position with reference to the sprocket.

Individual drive applied to old spinning frames in an existing mill.

The driving motor is kept in alignment by a spline in the motor support and the motor feet are grooved where they rest on the spline. The motor is moved in and out along the spline by the turning of a screw fixed in the motor support.

In applying silent chain drives to old machinery it is necessary for the chain manufacturer to know the speed and exact dimensions of driven shaft and keyway. With new machinery this information is supplied by the manufacturer. The chain manufacturer is supplied with an approved print of the motor for correctly boring the motor sprocket. Space must be allowed between the sprockets and the driving motor on one side and the driven machine on the other for chain guard or casing.

Instructions sent out by the manufacturers should be followed and the lubricants used should be in accordance with their recommendations. The use of lubricants containing acid has in a few cases caused rapid deterioration of chains. It is advisable to wash dirty chains in gasoline or kerosene. The gasoline or kerosene can be removed by soaking the chains in a solution of hot soap and water.

In the early days of individual drive application there was often expressed the fear that textile machinery would not withstand the sudden starting of the motor through chain drive and that either the machine parts or the yarn

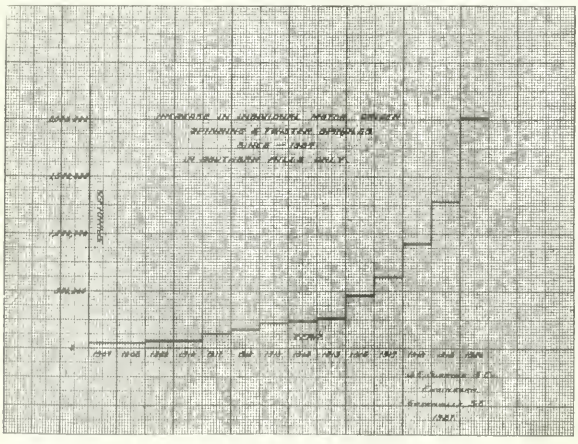


Figure One.

in process would break down. In a few cases of weak construction in spinning frame cylinders breakage did occur, but this was not general and its occurrence was too infrequent to be considered seriously. Breakage has not occurred, as the starting torque of a motor provided rapid but perfectly smooth acceleration from rest to full speed.

In any transmission of energy there is a certain amount of heat generated by losses. Where chain drives operate in an oil tight or partly ventilated casing a small percentage of this heat has to be radiated by the casing. To set at rest the rumors that chain drives were over-heating, temperature tests were made on 5 and 7½ horse-power chain drives oil tight casings on spinning frames. Chain casings showing the greatest amount of heat were selected for this test. The chains had been in operation continuously for several hours and had reached a maximum temperature.

Average maximum temperature in a 5 h.p. chain casing, 47 deg. C.

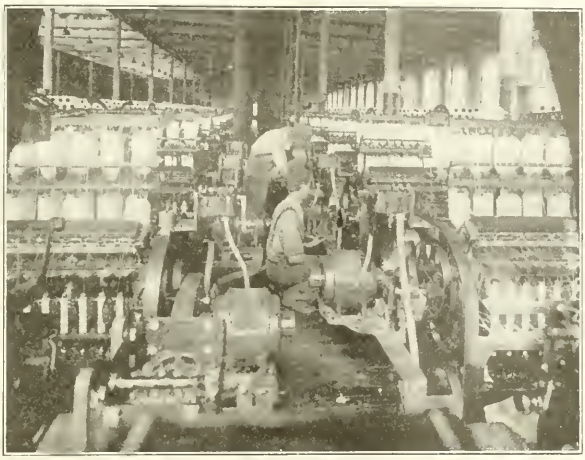
Average maximum temperature in a 7½ horse-power casting, 47 deg. C.

Room temperature, 30 deg. C.

To approximate the energy loss in these chains a 50 watt lamp was closed up in one of these 5 horse-power chain casings and a 75 watt lamp in a 7½ horse-power casing. The lamps were allowed to burn until the casings reached a constant temperature before the final temperatures were taken.

Temperature inside of casing with 50 watt lamp, 42 deg. C.

Temperature inside of casing with 75 watt lamp, 50 deg. C.



Saxon Mills, Spartanburg, S. C. A drive alley in Spinning Room. Spinning Frames are being changed over from Belt to Individual Drive.

The maximum temperature of casing with a 50 watt lamp agrees very closely with the average of 5 horse-power chains and the 75 watt lamp with the 7½ horse-power chains.

Assuming 4 horse power actually transmitted by the 5 horse-power chain and 6 horse-power actually transmitted by the 7½ horse-power chain, and the energy loss in watts by chain heating approximately the same as in the lamps, there is about 1½ per cent loss in both chains operating in chain drives and their efficiencies are about 98½ per cent. This agrees roughly with published efficiency tests.

The temperature of partly ventilated casings was about 6 deg. C. below the chains in oil tight casings. This comparison was made on all the present type ventilated casings.

The total heat generated in transmission in a spinning room is approximately the same for either belt drive or chain drive, when all losses of motors, chains and belts are considered.

From present information it is impossible to foretell the probable life of chain drives in textile mills. In some of the oldest installations where the drives have been in operation for 4½ years, they are still giving good service and showing very little wear.

As a general rule the first appearance of wear in chains is in the pins, this is noted by the increase in the pitch of the chain. Standard over-size pins can be obtained and inserted in chains, and the chains are brought back to practically the original pitch.

SCOTTISH WOOLLEN TRADE MARK ASSOCIATION, LTD.

Two years ago, to counteract the mischief which was being done to the age-long traditional reputation of Scottish Woollens by the flooding of the world,s markets with cloth purporting to be Scotch Tweed but for the most part neither made in Scotland nor consisting of pure virgin wool, but composed largely of shoddy, frequently adulterated with cotton, the Scottish Woollen Manufacturers applied to the British Govt,s. Board of Trade for a collective national trade mark for the identification of genuine Scottish Woollens. The Board of Trade granted the use of sneh a mark guaranteeing the cloth upon which the mark is stamped as "Made in Scotland of Pure New Wool", at the same time laying down strigent Regulations as to its use.

The Scottish Manufacturers formed an Association, "The Scottish Woollen Trade Mark Association", for the purpose of administering and giving publicity to the national trade mark.

The Association decided to send a representative Official Delegation to the United States and Canada to investigate the North American market, and to study the best methods of developing there the demand for genuine Scottish Woollens. It is believed that this is the first occasion on which an official delegation has been sent from this country overseas in the interests of a representative national industry..

The Delegation consists of about twenty members representing among themselves about one-half of the entire output of Scottish Woollens. Many of the members of the Delegation bear names which have been identified for generations with the traditional Tweed Industry of the Scottish Border.

The Delegation sailed from Liverpool for New York on 31st. December. It has visited New York,Washington and Philadelphia and its subsequent itinerary will be as follow: Boston, January 22; Montreal, January 24; Toronto, January 27; Hamilton, January 30; Buffalo, January 31; Rochester, February 1; Cleveland, February 2, and Chicago, February 9.

The British Wool Textile Industry

Eleventh Hour Rise in Prices of Raw Materials.

(By our London Correspondent.)

London January. 4. 1922— The fall in wool prices at the November sales in London has not lasted very long. Just before the old year departed a remarkable change came over market conditions outside London and 1922 opens with advanced prices for raw materials, contrary to expectations. Two weeks ago there was a feeling abroad that bedrock quotations had been reached; but a new era has now been opened and the trend of events, in a time taxed with difficulties, will be followed with interest.

The rise in prices is attributable to talk about a revival in the trade of British textiles; to an attempt to get Russia going in trading; and to rumours about a coming scarcity in merinos. Russia, it will be recalled, was one of the "bug-bears" in trade at this time last year. In political circles the French and British Premiers are discussing Soviet trade and their relations in regard to it and every effort is being made to get Russian resources opened up for the benefit of Europe generally. Judging by the orders that reach Finland, and the opinion prevailing there, Russia does want to get back to business on account of the plight her people are in. But Germany will do the business in Russia and in the psychological movement of wool the Germans will look to London and Bradford for their part supplies of raw materials. Sellers are consequently getting ready. Again, it is firmly believed that in the new year a revival in the British textile trade will take place. Some signs are already setting in and some of the people in Bradford predict that wool prices may double. To augment this contention merinos are quoted for the sake of illustrating it. Sometime ago Sir Arthur Goldfinch, the Director of the British Australian Wool Realisation Association (The "B.A.W.R.A.") stated that the consumption of merino wool—the highest qualities— was greater than the production by no less than 500,000 bales (= 150 million pounds) per year. The Association report, a synopsis of which recently appeared in the "Canadian Textile Journal", states that "Even if this year's clip of merino exceeds last year's by 150,000 bales, sales on the same scale as last year would exhaust by the end of November 1922 the whole B. A. W. R. A. stock of merino, plus the quantity grown up to June 30, 1922. If the sales continued on the scale of the last three months (in 1921) all the visible supplies would be exhausted by July next.

Big Rocks Ahead.

The threatened scarcity of merinos and the Russian rumours, added to which are prospects of a trade rivival, are the elements responsible today for a buoyancy in the raw materials market. But the great question of all is somehow overlooked and that is the discrepancies in the European rates of exchange. Business cannot be done on the present rates existing between currencies in England, Germany, Austria, Finland, and Russia. Therefore, the wool markets will, to a certain extent, depend on future buying for the European Continent and if this is heavy a material jump in prices will be experienced. On the contrary, if it was at all possible in some way to stabilize the continental exchanges there would be heavy buying in which the United States and Canada would enjoy a fair share. But up to the present all efforts have failed toward stabilization and Germany operated sparsely at the last London sales as a consequence.

On the question of merinos at Bradford tops are 6 cents a lb. dearer and higher values are expected. I remember in July last 64's changed hands at 58 cents; within the past three weeks the price reached close on 96 cents and today topmakers for 4 months delivery ahead want 100 cents.. It certainly looks that even in the case of 64's they will rise to 108 or 110 cents, whereas in the present conditions in which manufacturers find themselves, the prices should at least be in or about 78 cents to 84 cents.

If the B. A. W. R. A. are correct in what they say about the consumption of merinos the outlook is now not very bright, particularly when it is remembered that full time is not yet being worked in textile mills. The B. A. W. R. A. statement resolves itself into an indictment that wool is being consumed quicker than it is offered in a time of depression, and this indictment appears to be supported in many quarters, a speaker at a meeting of the Bradford Textile Society predicting that a scarcity would occur in 1922 and he prophesied the price of 70's and 80's botany wool at least double the price they are selling today.

Fine crossbreds wool is two cents a lb. dearer. Inferior qualities show a slight change in the upward direction.

The Outlook.

The spinners in Yorkshire report that there mills are slightly busier and some are running 55½ hours a week. The outlook, however, is good so far. Mills making blankets, rugs, and other articles could do with more orders. In the case of firms producing cloth the great "fly" in the "ointment" is the Retailer: he is a vicious gentleman who is killing trade just now. Heretofore, the manufacturer was accused of profiteering and legislation was introduced to harass him. The Retailer is now having a hand at the game of profiteering at the expense of the manufacturer and strange to say no one will left a finger against him. Not long ago a Bradford merchant sold 40 oz. all wool serge to a wholesaler at 37 cents a yard. A retailer brought it at 42 cents a yard—5 cents profit to the wholesaler — and put it in his shop window at 84 cents a yard. And the public considered it a bargain. It is a "trick of the trade" but "tricks" of this character keep the mills from getting to work and keep the large lists of unemployment. Fortunately unemployment is on the decline and that is one of the signs of the outlook being good. Beyond that one cannot go. "We are putting our trust in future and hoping for a change in 1922", said a millowner the other day to me.

Of course, too much cannot be expected at once in the aftermath of war. Some nations are on the verge of liquidation, and mill owners — at least in the United Kingdom — are down to rock-bottom in the matter of

reducing the costs of production. Wages have fallen considerably during 1921. In the textile trades 1,004,000 work people were affected and the aggregate net decrease per week reached £594,800. "Rigid economy" is the rule in English mills now and the cost of living is down to 99 p.c. as against 165 p.c. in January 1921.

At the same time mill owners are not without their troubles. They were confronted with a three months coal miners strike in 1921, other incidental troubles, and wage disputes. These meant 26 disputes in the textile industry, involving 379,000 workers who lost 6,928,000 working days and in the clothing thade 33 disputes affecting 5,000 workers who lost 81,000 working days. Thehe there was heavy rates and Government taxation.

..**British mills are not in a "land of milk and honey".**

Judging The Fineness of Wool

The Use of the Micrometer Calipers.

By J. A. HILL,

Wool Specialist, University of Wyoming.

For anyone who has good average vision, judging the fineness of wool is no more difficult than judging the size of trees. Both are a matter of practice and based on comparisons with known standards of size. Who could say that a given tree was five inches or seven inches in diameter if he had never measured a tree? No more can one say whether a fibre is five ten-thousandths or seven ten-thousandths of an inch in diameter if he has neither measured a fibre nor seen one measured.

Now there are many vocations which require a keen discrimination of the size of wool fibres. Those who deal in wool, either as buyers or sellers, and those who grade and sort wool, largely depend for their success upon a trained discrimination of fineness. In animal husbandry no one can hope to attain more than a fair success with sheep if he is not able to distinguish degrees of the fineness of wool fibre with accuracy. How can a man judge the uniformity of a fleece if all wool fibres seem to be about the same size? How can he tell whether the wool on a sheep is too fine or too coarse for its breed; and when he comes to sell his wool, how is he to have any idea of the grade he is selling?

Because it is important that animal husbandry students should be good judges of the fineness of wool, I offer this paper, which, I ask you to bear in mind, describes a method for training the judgment, but which does not seek to offer it as a method for the accurate measurement of fibres for experimental purposes.

The Best Instrument.

At the University of Wyoming we have found that the best instrument for measuring wool fibres, when the object is to impress their relative size upon the senses, is a micrometer caliper graduated to ten-thousandths of an inch. The one we use is made by Brown and Sharpe, and is the ordinary kind made for machinists. The instrument we use is supplied with a ratchet stop.

The caliper is a much better instrument for teaching a discrimination of fineness than a micrometer attached to a microscope. To be sure, it is less accurate than the micrometer; yet it is less accurate enough for this particular purpose. The main advantage is that the student has the fibre right before his eyes and in his fingers at the same time the caliper registers its size. With the microscope, if the specimens are mounted in balsam before being measured (the usual method) it is several hours, or it may be days, after the student has seen the group of fibres before he measures them. No matter how soon after mounting, he makes the measurements, if he measures them by groups, the individual fibre that he measures never makes any impression on his senses except the enlarged image that he sees in the microscope which is worse than no impression at all.

To measure the fibres, one at a time, under the microscope, takes much more time than it does to measure them with the calipers. And even when measured one at a time under a microscope, the reading is in some arbitary unit that must be converted into conventional units. However, the enlarged image is impressed more vividly on the mind than the true-life size image.

The old method by which students or apprentices learned to judge the fineness of wool consisted of their being given a sample and being told that "this is a high half-blood or 60's quality," with instructions to match it with other samples, which the instructor criticised. Having learned to judge wool by this method, and having more or less thoroughly instructed several students by the same method, I know that the old method was tedious and unsatisfactory as compared to the method of having the student measure fibres by means of calipers.

When we, who learned by the old method, first started to examine wool, it all looked more or less alike, and it was a long time before the grades stood out with any degree of clearness. If the student and instructor disagreed as to which was the finer of two samples of wool, there was no objective way to settle which was right. The student usually gave in to the authority of the instructor, but his ideas of the fineness of wool fibres still continued to be hazy, for he had not learned to discriminate accurately between the size of individual fibres. In fact, the tendency was to judge the fineness of a sample of wool by the closeness of the crimp or a characteristic appearance of the tip. Yet, it has been proved time and again that there is rather a low correlation between fineness of fibre and closeness of crimp.

The contrast between the results I secured with the students taught by the old method is what proves to me the ones taught by the new method is what proves to me that the new method is the best. In the first place, they show more interest in their work. The new method gives them something to take hold of. Then again, they criticise with intelligence the grades of various sorters that they examine, and they back their criticisms by actual measurements. They become keen critics of uniformity.

Not only that, but they can judge the absolute size of a fibre within one or two ten-thousandths of an inch.

* A paper presented to the American Society of Animal Production.

If they disagree with their instructor it isn't a matter to be settled by argument or authority, but to be settled by measurement. In some cases it turns out that the judgment of the student is right and that of the instructor is wrong. This gives confidence to the student and an assurance that will stand him in hand when it is necessary for him to make independent judgments of the fineness of wool.

An Important Factor.

It may be objected that a knowledge of fineness is not all that is required in order to classify wool into grades, sorts, or what the English call the "spinning qualities". This is true, but fineness is an important factor. And if the student finds that two samples of the same average fineness are assigned to different grades by a competent sorter, he then begins to study the softness, closeness of crimp, character of the tip, and other things that may have influenced the judgment of the sorter. But, if he doesn't know by measuring that the samples are of the same average fineness he may convince himself that there is a difference of fineness that he cannot see.

The adjustment and care of the caliper is explained to the student. If it has a vernier, the method of reading it is explained. He is cautioned to keep it in adjustment and always to close it down on the fibre at a slow and uniform rate of speed because otherwise the momentum will cause the jaws to have a crushing effect upon the fibre that is bad for the accuracy and can be avoided by care.

The student is then given a small lock of wool from a set of grades, or spinning qualities, that are as nearly standard as is possible to get at the present time. One part of the lock he keeps for his notebook and the other he washes in benzol and dries by blotting between filter papers. This removes all the grease and dirt as well as hardens the fibre to some extent, so that there is increased resistance to the jaws of the caliper. The student is usually required to measure an even hundred fibres, although if time is important, as few as fifty or even twenty-five can be measured.

How Measurements are Made.

Measurements are made in hundreds or aliquot parts thereof, because it facilitates the calculation of the percentage of frequency. Small strands of ten to twenty fibres are separated from the main lock, and all the fibres in these strands are measured instead of pulling single fibres at random from the larger lock. This is because the coarse fibres stand out from the lock and are also especially prominent in the tip, so that by pulling the fibres one at a time, the sample would be given a coarser measurement than it deserves.

In order to concentrate the student's mind on the size of the fibre, he is advised to estimate the size of each fibre before he measures it, and to be always trying to impress upon his mind just what a fibre that measures, say, seven ten-thousandths of an inch, looks and feels like.

The student is shown how to make frequency distributions of the measurements as they are taken, by keeping his record in the form of a tally sheet, recording each individual measurement by making a mark opposite one of a series of numbers appropriate to its size. (See method, page 121, in Davenport's "Principles of Breeding.")

The Student's Work.

He is then shown how to plot the graph of his frequency distribution. This he puts into his notebook along with the sample lock of the wool he has been measuring. He is shown what the mode is and how to calculate the average, and it is explained to him that the graph with the high mode and narrow base indicates a uniform sample of wool, while one that spreads all over the page shows a sample lacking in uniformity.

After a few standardised samples have been measured the student is instructed to match them as nearly as possible with samples which he has selected himself, and then to determine the accuracy of his judgment by means of the calipers.

I have found that it takes the average student less than one-half an hour to measure 100 fibres. An hour a day for three or four months can be profitably spent in this kind of work if the student wants to specialise in the fineness of wool. But, perhaps most animal husbandry students will have to get along with less. Five or ten hours should train a man to look at the size of the fibres rather than the crimp when judging the fineness of wool, and teach him how to manipulate the calipers, and then if he needs further training after he has finished school, he may for the sum of from six to fifteen dollars get a set of calipers and carry on the work himself. — Extracted from The Wool Record and Textile World.

BRITISH INDUSTRIES FAIR.

That many Canadian buyers will visit the eighth annual British Industries Fair to be held in London and Birmingham from 27th February to 10th March, may be taken as certain. Buyers believe that the market is more stable and that a renewal of their overseas purchasing visits is due. This Fair is Britain's annual display of her manufactures and industries and the trade buyers opportunity of selecting goods for the ensuing season's trade.

Since its inception in 1915 the British Industries Fair has grown until it is today the most important national trade fair in the world. In fact, one of the great difficulties with which the organizers. (The British Government Department of Overseas Trade) have to contend has been the lack of adequate buildings, for the Fair has grown to such an extent that it has been no easy matter to adhere to the policy of housing each section under one roof. To these who are familiar with the continental fairs which are held in innumerable separate buildings scattered throughout the length and breadth of a city, the advantages of such an arrangement will be obvious. For the 1922 Fair it has fortunately been possible to secure enough additional accommodation both in London and Birmingham to provide not only for the annual growth of the Fair, but also to find room for the great industries which have hitherto been exhibited at Glasgow. Textiles, however, will not be included in the 1922 Fair.

A very large number of industries will be represented at the Fair and a descriptive pamphlet containing a list of such will be mailed to intending visitors, together with a complimentary admission card, on application to the British Trade Commissioners in Canada. Their addresses are: — 248 St. James St., Montreal; 260 Confederation Life Building, Toronto; and 610 Electrical Railway Chambers, Winnipeg.

A Model Hosiery Factory

Plant of the Holeproof Hosiery Company of Canada, Ltd., London, Ont., Combines Every Feature That Will Make Employees Comfortable and Efficient— First Unit of an Aesthetic Group of Buildings.

By H. P. ELLIOTT, Consulting Engineer, Toronto and London, Ont.

Lockwood, Greene & Co., of Canada, Ltd., Associate Engineers, Montreal, P. Q.

(In "The Contract Record.")

Engineers in designing a building to be used for manufacturing must be guided by certain general instructions from the owners. In many cases these instructions merely refer to the size or capacity of the manufacturing plant, no special attention being paid to the general architectural features of the exterior and the sanitary arrangements and devices for the comfort and safety of the employees are the minimum called for by provincial and municipal laws and ordinances. Many employers of labor have found however, that the employees are more efficient and that a higher class of labor can be obtained if not only the best facilities are provided for carrying out the work in the way of labor, tools, and efficient arrangements of all kinds but also, if the work rooms are clean, well ventilated, well lighted and comfortably heated. Many of the largest employers go a step farther and are of the opinion that it pays to consider the aesthetic features for the interior and exterior both for the advertising value and for the effect upon the employees.

The owners of the Holeproof Hosiery Co., London, Ont., instructed their engineers to design a plant which would be the most convenient and efficient that it was possible to build and that would embody everything possible for the health, safety, convenience and comfort of its employees. They stipulated that the building should have a pleasing exterior and should follow the lines of some established order of architecture and that the effect should be obtained by the general lines, proportions and disposition of the masses rather than by artificial ornamentation.

After considering the present and probable future requirements of the business, the engineers made a block plan showing five buildings each approximately of the size of the first unit to be erected. The building which is the subject of these notes has a frontage of 150 feet, a depth of 85 feet and has four stories and basement. The next unit to be erected will complete the front, making it symmetrical in relation to the tower. The remaining three buildings with the units already mentioned will make a U-shaped group with the shipping and receiving platforms, driveways, railroad sidings and underground coal bunkers in the court. The present unit includes the underground coal bunkers, central steam plant, etc. There is a switch track which reaches four railroads.

The building is of reinforced concrete, flat slab construction. The tower houses a 30,000 gallon sprinkler tank in its upper story and the two 8,000 gallon tanks for soft water in its lower storey.

The whole exterior of the building is veneered with Don Valley, oriental rug, pressed brick, specially selected. It is trimmed with the best quality Bedford stone (Indiana limestone).

The general dimensions of this building as already given were chosen to suit manufacturing requirements. The heights from floor to floor are greater than usual and were considered proper for light and ventilation: Basement, 10 feet; first, second and third 14 ft. 6 ins.; fourth, 16 ft. The height of the tower is 114 feet above the sidewalk.

In order to leave the floors entirely unobstructed the stairways, toilets, elevator shafts and ventialting ducts are kept at one end and occupy a space of twelve feet running clear across the width of 85 feet. An extra stairway is built in a shaft outside the rectangle of the building. The columns are 27 feet apart.

The dye house is upon the top floor and the working floor of this department consists of heavy wood slats about 18 inches above the solid floor. Under the whole dye house is a tank, 18 ins. deep lined with 1½ ins. of Trinidad Lake asphalt. This tank is formed of concrete and properly drained to floor below. The steam dryers for drying and shaping the dyed goods and the stock rooms for undyed goods are also located on this floor. The winding, knitting, ribbing and cutting departments are on the third floor. Matting and boxing; looping, inspection and mending are on the second floor. The general and private offices, box storage, finished goods storage, shipping and receiving rooms are on the first floor. The basement is used chiefly for the storage of raw stock.

The general and private offices and red cross room extend along the whole front of the building and are finished in hardwood, and furnished and decorated in a manner that would do credit to a set of banking offices.

The whole interior of the building, except the offices, is painted with mill white enamel. The walls partitioning the offices from the rest of the first floor are of gypsum block plastered. The portion around the dye house is of the same material with special waterproof plaster and waterproof enamel paint. All stair and elevator enclosures are brick walls and openings are protected by fire doors. The partitions surrounding the lunch rooms and locker rooms on the second floor are of cypress and glass, the cypress being finished natural color.

Lunch Rooms, Locker Rooms, Smoking Room.

As the majority of the employees are women, special attention was given to the lunch room and locker rooms for these. There is also a smoking room and lunch room for men, which is served from the same kitchen. These rooms are all on the second floor and occupy a space 34 feet by 120 feet. These rooms are all beautifully finished with cypress and the kitchen contains all modern conveniences for preparing and serving meals, such as electric dish washer, steam tables, steam heated plate cupboards, steam heated tea and coffee urns, etc., etc. These rooms are artificially ventilated in such a manner that there is always a strong current of air flowing to the lunch rooms and from the lunch rooms to the kitchen.

Heating and Ventilating.

The building is heated by low pressure steam in wall radiators. These are automatically controlled by ther-

mostats, which hold the temperature at the proper degree. Fresh air is taken from outside and by means of a centrifugal fan drawn through a "Carrier Type" air washer. This air is passed through tempering and heating coils which by means of thermostats control not only its temperature but its humidity. In the cold weather this fresh air is heated to approximately the temperature inside the building. In the hot weather the air is cooled. This ventilating system makes it possible to change the air in the building once in twelve minutes thus making five complete changes per hour and hence the atmosphere inside the building is at all times delightfully clean and fresh and of the proper humidity irrespective of weather conditions. The fan and air washer with control apparatus are situated in the basement.

Special attention is given to the ventilation of the dye house on account of the large amount of steam from the vats. Fresh air is passed over heating coils and by means of a centrifugal fan, located in a pent house on the roof, this heated air is blown across the dye house. Another fan sucks out the air. It is possible to completely change the air every three minutes and as the fresh air is heated no fog is created.

Four 36 inch disk fans located in pent houses on the roof suck the air from the drying room.

Boiler House, etc.

After much consideration, it was decided to have the boiler house located under the building. The chief reason for this was to avoid interfering with the contemplated block plan for future buildings. A section of the basement was therefore excavated to such a depth as to allow a ceiling height of about 24 feet. The owners gave particular instructions that the boiler room should be protected from any chance of water seepage through the walls or floor. In constructing the walls, a 12 inch concrete wall was first erected and a 6 inch concrete floor was laid. A sheet of special "membrane" waterproof material was then laid over the floor and inside the walls. An additional 12 inch reinforced concrete wall was then constructed inside the first one. Another 6 inch concrete floor was then laid over the first one. All pipe trenches, furnace pits, etc., were constructed above these concrete floors and the real floor of the boiler room, another 6 inch monolithic concrete slab, was laid three feet above the other floors. The space between the floors was filled with fine crushed stone. A sump pit twelve feet long, five feet wide, eight feet deep is constructed below the boiler room floors. The floors all slope to and drain into this. It merely takes care of any accidental water and is drained by means of an automatic electrically driven sump pump. It can also be drained by a steam siphon.

The present boiler plant consists of two 72 inch by 16 foot return tubular boilers having heating and grate surface sufficient for 150 B. H. P. each. Space is allowed for two additional of similar capacity. They are equipped with "Murphy Automatic Smokeless Furnaces". The construction of these furnaces allows a 24 hour supply of coal to be stored in their hoppers from which it is automatically fed to the fires. The clinker and ash are automatically removed from the fires.

The large underground coal bunkers are outside the building but open to the boiler room and the coal is elevated to the furnace hoppers by means of a hydraulic lift. The ashes and cinders are removed by the same lift.

The boilers are operated at 125 lbs. pressure and live steam is carried to the dye house at this pressure. The pressure is reduced to two lbs. for the heating system and for feeding the tempering and heating coils for the ventilating systems. Another line, carrying a pressure of 6 lbs. feeds the dryers on the fourth floor and certain water heating coils in the dye house. Another line at 10 lbs. pressure serves the apparatus in kitchen and lunch rooms.

The returns (condensed steam) from heating system and all other apparatus are fed by gravity to a receiving tank and automatic, steam driven boiler feed pumps return this to the boilers.

Hot Water Supply.

A pipe coil heater, located in the boiler room, has a capacity of 2000 gallons per hour heating water to 190 deg. F. The exhaust from the boiler feed pumps is turned into the coils of this heater and this is supplemented by steam from the boilers reduced to about one lb. pressure. This heater is connected through circulating pipes with an insulated steel tank in the tower which holds 8000 gallons. The water used is absolutely soft water from a water softening plant as described below and not only supplies the dye house but serves all the lavatories, and is used to feed the boilers. The boilers have been in operation for over twelve months and have never required cleaning and there is no sign of any scale.

Water Softening Plant.

A "Permutit" water softening plant is installed on a raised concrete platform in the boiler room. This has a capacity of 40,000 gallons in ten hours, and as already mentioned two storage tanks are located in the tower. One is for cold soft water and the other for hot soft water and each has a capacity of 8,000 gallons. The only chemical used in connection with the softening of water after the "Permutit" plant is once constructed, is common salt. The "Permutit" plant is so located that the charging of the salt is done from a platform at the level of the basement floor. As already stated the water is absolutely soft and this makes possible the use of delicate operations in dyeing which give the fine and delicate shades of color now demanded in silk hoisiery.

Illuminating System.

Although lofty ceilings, white enamelled walls, large window lights on both sides, and extra large spaces between columns insure a maximum of daylight, artificial light is required early mornings and late afternoons during the mid winter months. A very fine quality of artificial light is required and indirect lighting is used throughout. The intensity of the light varies but an idea of the amount and intensity can best be conveyed by stating that all ceilings are provided with light outlets at 14 foot centres both ways. The lights used in these outlets are 300, 400 and 500 watt depending upon the department to be lighted and this figures from 1.5 to 2.5 watts per square foot of floor space. Owing to the light being totally indirect, and having the proper color tone and surface on the walls and ceiling, a very soft diffused light is obtained with no shadows.

Power and Power Transmission.

At the present time all the machinery including fan motors is driven from the hydro system. No over-head shafting is used except in the dye house. Both power and light feeders are controlled by a complete switchboard in the basement, which is equipped with oil circuit breakers, overload and no-load relays, measuring instruments, etc.

Telephone, Auto Call, Electric Time Clocks, Etc.

Electrically operated clocks controlled by a master clock are located in all departments. The in and out time recorders for the employees are located in each department, and these are electrically operated and controlled by the master clock. A system of signal bells which signal the hours for starting and stopping work are also electrically operated and controlled by the master clock.

Telephones are installed in all departments and connect with a private branch exchange board located in the general office. This is all part of the Bell telephone system. An outo-call central is located beside the telephone switchboard. This auto-call allows the switchboard operator to cause signal bells to ring in all parts of the building and as all heads of departments have a definite signal and as there are telephones in all parts of the building any person can at onee be reached by telephone.

Illuminated Flag.

Another feature specially called for by the owners for patriotie reasons is an illuminated flag. A large flag is carried on a pole in the centre of the tower and is about 150 feet above the side walk. It is illuminated by eight powerful searchlights concealed behind the parapet walls of the tower. These are so directed that the flag is intensely illuminated no matter in what direction the wind is blowing and as the flag pole is not illuminated the flag appears to be floating in space and en a dark night has a very beautiful effect.

The boiler plant, heating system, ventilating systems, electric wiring for all purposes, electrie lighting system, fixtures, plumbing, etc., were all installed by the Bennett & Wright Co. of Toronto. The work was completed in record time and in a most satisfactory manner.

The building structure was constructed by day labor by the Stone & Webster Co. of Boston. These people employed local sub-contractors and local labor.

The Powers system of temperature and humidity control was supplied by Powers Regulator Co. of Canada.

All steam traps, reducing valves, sump pump, boiler feed pumps, radiator valves and traps, pipe coil heater, etc., were supplied by Darling Brothers of Montreal. The boilers and furnaces were installed by G. E. Leonard & Sons, of London. The air washer and ventilating fans were installed by the Canadian Blower & Forge Co., of Kitchener.

TEXTILE PRODUCTS' SHOW

Preparations advance space for the February Show of textile products, synchronizing with the annual conventions of various interested Sections of the Retail Merchants Association of Canada and timed also for the period when unaffiliated merchants and buyers from all parts of the dominion will visit Toronto in largest number. Virtually the entire mezzanine floor of the King Edward hotel has been reserved for the unique show—unique in Canada although exhibitions on somewhat similar lines have been markedly successful elsewhere, notably and most recently the Textile Products Show at Greenville, S. O., October 6-12 last. The purpose of the forthcoming Exhibition primarily is to demonstrate and emphasize the quality and attractiveness of Made-in-Canada Textile Products in their full range; enlist the sympathetic co-operation of Canadian retailers in pressing upon their customers the quality, style and range of national textile manufactures; and utilize the Exhibition and interest of the retailers therein to obtain widespread publicity for the demonstrated advantage to all Canadians in Canadian users demanding Canadian goods.

Decision to hold this textiles show, in which prospective exhibitors and attendants already are evincing very marked and sympathetic interest, was reached at a meeting on the 17th December, following preliminary conferences previously held from time to time at the offices of the Canadian Manufacturers Association. C. H. Gibbons, a veteran Canadian publicist with considerable specialized experience also, as Commissioner for British Columbia at the Pan American World's Exposition and the St. Louis Exposition, was secured as manager of the interesting enterprise and, despite the handieap of holidays intervening at the outset of his campaign, organization already is well perfected and indications are that every exhibit location will be bespoken within the fortnight.

The booth plan provides for eight-one displays and of these twenty-five have been reserved within three days of the apportionment of available spaee. A truly national show is earnestly aimed at, and in demonstration of the spirit of "no sectional or other favoritism or partiality" animating promoters and management, Montreal and Toronto industries come in together at the outset on equal selection terms and are pulling together for success without regard for boundary lines, provincial or economic. It is significant of the interest of the textile producers that no one firm or individual thus far approached has failed to respond with an immediate application to be among those present. The Hawthorn Mills Ltd. of Carleton Plaee enjoys the distinetion of having first secured quarters for its display within an hour of the plan being available; while others — such as John Forsyth, Ltd. of Kitchener and the Deaeon Shirt Co., Belleville—regarding the mails as too slow for expression of their whole-hearted endorsement of the seheme, requisitioned long distance and the telegraph wire to seal their determination to be among pioneer patrons.

The exhibition is to engage public attention from Monday, February 13 to and ineluding Friday, the 17th proximo. It is to include not only fabries in common acceptanee of the term, but garments as well, of all kinds in which textile fabries are used. Manufactured elothing alone will monopolize a very large seetion. There will be fine ranges also of overalls, oiled garments, raineoats, silk goods, hats and caps, fabrie gloves, neckwear, suspenders, cottons, woollens in all their wide range and extended applicability. The mills, indeed are among the most loyal and enthusiastie elements of support.

By the time this issue is in the hands of trade readers there is small room for doubt that every one of the eighty-one booths and show rooms will have been assigned and the attentions of the management concentrated upon the working out of the variety of lines conducive and necessary to making the exhibition attractive and educative in largest degree. Addresses by representative leaders in merchandising science, opportunities for helpful interchange of ideas and the development of closer fraternal relations, through arranged luncheons, dinner and entertainment features of the exhibition week, are supplementary attractions counted upon to play their respective parts in attracting two thousand or more interested dealers to Toronto and to the show.

TENDENCY TOWARDS HIGHER VALUES

Wholesalers generally have few, if any, regrets at having seen the closing day of the past year says Bradstreets' Montreal. Reduced prices have compelled a large number of houses to write down losses, some of which have been very heavy, others say they came out on right side, but with little of no profit. There is an optimistic feeling amongst the trade in general, that this year we are starting out on better business conditions although there may be still some difficulties to be overcome.

The dry goods men say that they cannot see the possibility of a decline in prices in the near future, the tendency on the whole will, they say, be slightly towards higher values, especially when the present stocks are exhausted and they have to come into the market again. Many lines of cottons are advancing in keeping with the firmer feeling in the raw material.

AMERICAN COTTON PRODUCTION

The following article is a study of cotton trade statistics prepared by Alston H. Garside, Statistician of the National Association of Cotton Manufacturers of Boston, Mass., and published in National Association's bulletin.

The production of cotton in the United States is computed in two different ways: first, by the ginnings; secondly, by the amount of cotton moved out of the cotton belt during the season both by rail overland and through the ports, plus the amount consumed within the cotton belt, with due allowance for the difference between the stocks held within the belt, including those on plantations, at the end of the season and those at the beginning. The Bureau of the Census compiles its figures by the first method. Henry G. Hester, Secretary of the New Orleans Cotton Exchange, employs the second method.

As all cotton has to be ginned before it is spun, and as most cotton is ginned soon after it is picked, the ginnings in any given season form a reasonably accurate measure of the actual production in that season. The total number of bales ginned, however, is not absolutely identical with the total number of bales entering the supply available for consumption. The Census Bureau, in compiling its statistics of supply and distribution of cotton at the end of each season, always finds that the amount distributed (the amount consumed, plus the exports, plus the amount destroyed, plus the amount in storage at the end of the season) is larger than the countable supply (the ginnings, plus the net imports, plus the amount in storage at the beginning of the season). The amount required to balance the distribution is accounted for by a number of factors, among them being the so-called "city crop," that is, rebaled samples. The amount which the Bureau of Census has to add each year "to balance distribution" must necessarily be added to the ginnings to get the total production. With this addition, the Census Bureau's figures are generally accepted as substantially correct.

That the statistics which Secretary Hester compiles by the other method are also closely accurate is shown by the fact that usually both authorities agree within one or two per cent. Secretary Hester obtains his figures of the shipments of cotton out of the cotton belt direct from railroads, steamship companies, and customs authorities at the ports; he gets his figures of Southern consumption direct from southern spinners; he gets his data on stocks of cot-

ton in the South from local exchanges and from individual holders of cotton throughout the belt. Obviously it is impossible for either the Census Bureau or Mr. Hester to get absolutely accurate statistics as to the holdings of every one of the two million growers, and the many thousands of other possible owners of cotton, but both he and the Census Bureau are able to make a very close approximation each year, sufficiently accurate for all practical purposes.

The following tables will be of interest as showing how the figures of the Bureau of the Census and those of Secretary Hester check up with each other:

PRODUCTION OF COTTON IN THE UNITED STATES IN RUNNING BALES

Including Linters

Growth Year	Ginnings	Census Bureau's Figures Annual Additions	Total Crop	Hester's Figures of Total Crop
1914	16,738,000	264,000	17,002,000	17,004,000
1915	12,013,000	214,000	12,227,000	12,175,000
1916	12,664,000	250,000	12,914,000	12,966,000
1917	12,345,000	341,000	12,686,000	12,424,000
1918	12,817,000	194,000	13,011,000	13,070,000
1919	11,921,000	259,000	12,180,000	12,000,000
1920	13,700,000	187,000	13,887,000	13,750,000

Exclusive of Linters

Growth Year	Ginnings	Census Bureau's Figures Annual Additions	Total Crop	Hester's Figures of Total Crop
1914	15,906,000	256,000	16,162,000	16,172,000
1915	11,068,000	103,000	11,171,000	11,318,000
1916	11,364,000	54,000	11,418,000	11,691,000
1917	11,248,000	144,000	11,392,000	11,353,000
1918	11,906,000	141,000	12,047,000	12,207,000
1919	11,326,000	258,000	11,584,000	11,429,000
1920	13,271,000	187,000	13,458,000	13,370,000

Correspondence

PARKS-CRAMER COMPANY
Engineers and Contractors
Industrial Piping and Air Conditioning
Fitchburg, Mass.

Editor Canadian Textile Journal

Sir,

In the Dec. 20th issue of the Canadian Textile Journal your questions and answers about "Cotton and Its Manufacture", by H. D. Martin prompts us to go into a little more detail with regard to one of the questions contained in the list.

Question: How much moisture can be regained by absolutely dry cotton

Answer: About 8%.

Up to 15 years ago not a great deal was known about the hydroscopic condition of the cotton fibre. About that time, Mr. W. D. Hartshorne, then connected with the mills in Lawrence, Mass., hung up several skeins of cotton exposed to the outside air but sheltered from wind and rain. The results of his tests on the weight of this material from day to day showed that the cotton fibre varied in a uniform way with different atmospheric conditions. The result of this series of tests was published by the Am. Society of Mechanical Engineers some 10 years ago.

Mr. Hartshorn then severed direct connections with the textile mills by whom he had been employed and undertook research and consulting work exclusively. He found that cotton fibre would regain as much as 16% in excess of its dry weight under a condition of

100% relative humidity at 100° F, dry and wet bulb temperature. He found also that with a dry bulb temperature of 60° at a relative humidity of 13% cotton would regain only 3% of its dry weight. These variations of so-called regain have been the basis of all modern humidifying control. The statement that cotton will regain 8% of its dry weight when not qualified as to the temperature and humidity under which this change will take place is inclined to be somewhat misleading, as the regain is dependent upon the dry bulb temperature and relative humidity.

Though it has never been accepted by all manufacturers as standard it has been advocated and some day probably will be accepted, that 8 1-2 regain is the proper figure at which cotton should be bought and sold.

This condition can normally be brought about by storing the cotton at a temperature of 70° with 64% relative humidity which is not an unreasonable condition to maintain throughout the greater portion of the year, and is a condition under which cotton will spin and weave with excellent satisfaction.

For some years this company has been conducting in a small way an educational campaign on the value of controlling humidity in a mill on the regain basis. A great many mill men do not yet realize the value of manufacturing their goods under constant regain conditions, and it is with a view toward educating this "doubting Thomas" army that we have prepared a series of bulletins dealing with this subject. We are pleased to enclose copies of our Bulletins 421, 921, and 1121 which treat in a general way on this subject, which is becoming more and more an important factor in mill operations. If a mill cannot control its humidity, it cannot accurately control the counts of yarn it manufactures.

Yours truly,

THAYER FRANCIS.

PERSIAN CARPETS AS MONEY.

—(By mail).—In consequence of the low buying power of the mark, Germans are gradually reverting to trade by barter, or to counting commodities and articles as the real money unit. It is reported from Pomerania that peasant farmers have pledged themselves to sell eggs and butter at prices measured in pounds of nails. In Berlin, Persian carpets are regarded as money.

Gelinas & Pennock, 207 St. James St. Montreal have been appointed Representatives of Furnace Engineering Co. Inc., New York.

Mr. W. J. WALSH,
President of Walsh Plate & Structural Works, Ltd.,
Drummondville, Que.

The Atteaux Dyestuff and Chemical Co., Toronto, sole agents for Farbenfabriken worm Friedr. Bayer & Co. announce that their principals have devised a chemical process to render wool immune from the attack of moths without affecting its valuable properties in the slightest degree. They are now able to place on the market Eulan F. (patent applied for) a product which is expected to arouse general interest.

The Clark Blanket Co., Limited R.R. No—1, Dundas, Ont. announce that owing to the death of the late James A. Clark the management of the company has been taken over by John A. Clark, with W. B. Clark as secretary-treasurer .

INDEX TO MILL SUPPLIES

Acid-Resisting Paint:
McArthur, Irwin, Limited
Dominion Paint Works Ltd.
Canadian Johns-Manville Co., Ltd.
Albone:
The Roessler & Hasslacher Co.
Aniline Oil:
British Dyestuff Corporation Huddersfield Ltd.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Aniline Dyes:
Atteaux Dyestuffs & Chemicals Co., Limited
British Dyestuff Corporation Huddersfield Ltd.
L. B. Holliday & Co., Ltd.
A. Klipstein & Co.
Geigy Company, Inc.
Pollack Brothers & Co
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
T. D. Wardlaw & Son
Automatic Feeds for Cotton and Wool:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Sargent's C. G. Sons Corp.
Whitin Machine Works.
Automobile Gears:
Diamond State Fibre Co., Canada, Ltd.
Bagging Machines:
Sargent's C. G. Sons Corp
Baling Presses:
Bredannaz, Louis & Son.
Barrels:
Diamond State Fibre Company.
Baskets:
Diamond State Fibre Company.
Beamers:
Crompton & Knowles, Loom Works
Saco-Lowell Shops.
Belting:
McLaren, The J. C., Belting Co., Ltd.
Belt Dressing:
McLaren, The J. C., Belting Co., Ltd.
Bleaching Powder:
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited
Can. Salt Co., Windsor, Ont.
Nichols Chemical Company
Bleaching Materials:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co., Ltd.
McArthur, Irwin, **Limited.**
The Roessler & Hasslacher Co.
Nichols Chemical Co., Limited.
Sharpe C. A. Ltd.
Boards:
Diamond State Fibre Company.
Bobbins, Spools, Shuttles, Etc.:
Canada Spool and Bobbin Co
Jefferson, Edward.
Leigh & Butler.
Watson, L. S., Mfg., Co.
Boxes—Fibre:
Diamond State Fibre Co., Canada, Ltd.
Boiler Graphite:
Dominion Paint Works Ltd.
Boiler Feed Water Purifiers:
Scaife, Wm. B., & Sons Co.
Brick Paint:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Brushes, Steam:
David **Gessner.**
Jefferson, Edward
Burr Pickers:
Jefferson, Edward.
Leigh & Butler.
Sargent's, C. G., & Sons.
Cans:
Diamond State Fibre Company
Canvas Waterproofing Paint:
Dominion Paint Works, Ltd.
Carbonizing Machinery:
East Jersey Pipe Corporation.
Jefferson, Edward.
Sargent's, C. G., & Sons.
Tolhurst Machine Works.
Whitehead, Emmans, Ltd.
Card Clothing:
Bredannaz, Louis & Sons
Crabb, Wm. & Co.
Leigh & Butler.
T. D. Wardlaw & Son
Watson, L. S. & Co.
Card Grinding Machinery:
Leigh & Butler.
Roy, B. S & Son Company
Saco-Lowell Shops.
Whitin Machine Works.
Carding Machinery:
Jefferson, **Edward.**
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.
Card Clothing Strickles:
David **Gessner.**
Cards:
Saco-Lowell Shops.
Jefferson, Edward.
Leigh & Butler.
Whitin Machine Works.
Carpet Machinery:
Crompton & Knowles Loom Works
Saco-Lowell Shops.
Caustic Soda:
Canadian Salt, Co.
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited
Nichols Chemical Company
Whitin Machine Works.
Centrifugal Dryers:
East Jersey Pipe Co.
Imperial Trading Co.
Watson, Laidlaw Co.
Tolhurst Machine Works.
Chemicals:
Atteaux Dyestuffs & Chemicals Co., Limited
British Dyestuff Corporation Huddersfield Ltd.
Dow Chemical Co.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited
Nichols Chemical Company
Sharpe C. A. Ltd.
The Roessler & Hasslacher Co.
Chloride of Lime:
Atteaux Dyestuffs & Chemicals Co., Limited
Canadian Salt Co.
Grasselli Chemical Co.
A. Klipstein & Co., Ltd.
McArthur, Irwin, Limited
Nichols Chemical Co.
Sharpe C. A. Ltd.
Watson, Jack & Co., Ltd.
Cleaning Waste Machinery:
Jefferson, Edward.
Leigh & Butler.
Tatham, Wm., Ltd.
Watson, Jack & Co., Ltd.
Whitin Machine Works.
Clinch Linings:
Diamond State Fibre Company.
Canadian Johns-Manville Co., Ltd.
Cloth Presses:
Gessner, David.
Combs (Wool and Cotton):
Crompton & Knowles Loom Works
Jefferson, Edward.
Leigh & Butler.
Philadelphia Textile Machinery Co
Gessner, David.
Whitin Machine Works.
Combs—Fibre:
Diamond State Fibre Co., Canada, Ltd.
Concrete Paint:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Concrete Floor Hardeners:
McArthur, Irwin, Limited
Cooling and Conditioning Machine:
Jefferson, **Edward.**
Cooling Frames, Cloth:
Gessner, **David.**
Jefferson, Edward.
Cotton:
Dominion Textile Company.
Cotton Machinery:
Crompton & Knowles Loom Work
East Jersey Pipe Corporation.
Draper Corporation.
Foster Machine Co.
Jefferson, Edward.
Klauder Weldon Dyeing Mach. Co.
Lamb, J. K., Textile Machinery Co
Leigh & Butler.
Roy, B. S. & Son, Company.
Saco-Lowell Shops.
Stafford Co., The
Tolhurst Machine Works.
Wildman Mfg. Co.
Whitehead, Emmans, Limited.
Whitin Machine Works.
Cotton Openers and Lappers:
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.
Cotton Waste Machinery:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.
Cotton Yarn Dyers:
Saco-Lowell Shops.
Crayons:
Lowell Crayon Co.
Cylinder Covering:
Dodge, C. S.
Dobbles:
Crompton & Knowles Loom Works
Conditioning Machines:
Jefferson, Edward.
Covers, (Roller):
Diamond State Fibre Company.
Delivery Cases:
Diamond State Fibre Company.
Damp-proofing Paint:
McArthur, Irwin, Limited
Drawing Frames:
Saco-Lowell Shops.
Jefferson, Edward.
Leigh & Butler.
Whitin Machine Works.
Drying Machinery:
Bredannaz, Louis, & Sons.
East Jersey Pipe Co.
Imperial Trading Co.
Watson, Laidlaw Co.
Jefferson, Edward.
Leigh & Butler.
Sargent's, C. G., & Sons.
Saco-Lowell Shops.
Tolhurst Machine Works.
Stephenson, Harry
Duck Machines, Cotton:
Gessner, David.
Dyeing, Drying, Bleaching and Finishing Machinery:
East Jersey Pipe Corporation.
Hussong Dyeing Machine Co.
Jefferson, Edward.
Klauder-Weldon Dyeing Machine Co
Klipstein, A. & Co.
Leigh & Butler.
Philadelphia Textile Machinery Co
Saco-Lowell Shops.
Roy, B. S. & Son, Company.
Tolhurst Machine Works.
Whitehead, Emmans, Ltd.
Dye Sticks:
Klauder-Weldon Dyeing Machine
Dyestuffs and Chemicals:
Atteaux Dyestuffs & Chemicals Co., Limited
American Dyewood Co.
British Dyestuff Corporation Huddersfield Ltd.
Benson, W. T., Co.
Dow Chemical Co.
Geigy Co., Inc.
Grasselli Chemical Co.
L. B. Holliday & Co., Ltd.
A. Klipstein & Co., Ltd
Kuttroff, Pickhardt & Co., Inc.
McArthur, Irwin, Ltd.
Marston, John P.
Nichols Chemical Co.
Pollack Brothers & Co.
Sharpe C. A. Ltd.
Stamford Mfg. Co.
T. D. Wardlaw & Son
Watson, **Jack & Co., Ltd.**
Dyewood Extracts:
Atteaux Dyestuffs & Chemicals Co., Limited
Imperial Dyewood Co.
McArthur, Irwin, Limited
Newbert Color Co.
Sharpe C. A. Ltd.
T. D. Wardlaw & Son
Watson, Jack & Co., Ltd.
Enamels:
McArthur, Irwin, Limited
Canadian Johns-Manville Co., Ltd.
Enamelled Conditioning Bobbins and Spools:
Leigh & Butler.
Engineers:
Main, Chas. T.
Tolhurst Machine Works.
Extractors:
East Jersey Pipe Co.
Imperial Trading Co.
Watson, Laidlaw Co.
Tolhurst Machine Works.
Extractors, **Full Width Vacuum:**
Gessner, David.
Jefferson, Edward.
Fibre Receptacles:
Diamond State Fibre Co.
Fibre Cans:
Jefferson, Edward.
Stephenson, Harry
Fibre Containers:
Diamond State Fibre Co.
Filters:
Scaife, Wm. B., & Sons Co.
Finishing Machinery and Instal
Gessner, David.
Fire-Retarding Paint:
Dominion Paint Works, Ltd.
Canadian Johns-Manville Co., Ltd.
Flute Rolls:
Jefferson, **Edward.**
Leigh & Butler
Saco-Lowell Shops.
Flyers:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.
Frilling and Seaming:
McArthur, Irwin, Limited

INDEX TO MILL SUPPLIES --- Continued

Garnetts:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.

Garnett Grinders:
Roy, B. S. & Son, Company

Gassing Machines (Yarn):
Fosler Machine Co
Saco-Lowell Shops.

Gill Boxes:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.

Gears—Waterproof, Noiseless:
Diamond State Fibre Co. of Canada, Ltd.

Glass Plate and Mirror:
Sharpe C. A. Ltd.

Glass-Window:
Sharpe C. A. Ltd.

Graphite Paint:
Dominion Paint Works Ltd.

Harness and Frames:
Garland Mfg. Co.
Steel Hedde Mfg. Co

Heddles:
Bredannaz, Louis, & Sons
Steel Hedde Mfg. Co.
Watson Mfg. Co., L. S

Hosiery Transfers:
Kaumagraph Co

House Paint:
Canadian Johns-Manville Co., Ltd.
Dominion Paint Works, Limited.
Harley-Kay, Limited.
McArthur, Irwin, Limited
Scott & Williams.
Sharpe C. A. Ltd.
Dominion Paint Works Ltd.

Hydro-Extractors:
East Jersey Pipe Corporation.
Imperial Trading Co.
Watson, Laidlaw Co.
Jefferson, Edward.
Tolhurst Machine Works.
Stephenson, Harry
Whitehead, Emmans, Ltd.

Insulation:
Diamond State Fibre Co., Canada, Ltd.
Canadian Johns-Manville Co., Ltd.

Hosiery Boards:
Harley-Kay, Limited.
Jefferson, Edward.

Hot Surface Paint:
Dominion Paint Works, Ltd
Canadian Johns-Manville Co., Ltd.

Hydro Extractors:
Tolhurst Machine Works.

Jacquards:
Crompton & Knowles Loom Works

Knit Goods, Finishing Machines, Crochet, Etc.:
Merrow Machine Co., The.
Spindler, E. O.

Knitting Machinery:
Crane Mfg. Co.
Dubied, Machinery Co.
Harley-Kay, Limited.
Spindler, E. O.
Stafford & Holt.
Tompkins Bros.
Scott & Williams.
Wildman Mfg. Co.

Knitting Needles and Supplies:
Harley-Kay, Limited.
Spindler, E. O.
Wheeler, Charles E., & Son.

Logwood Extract:
Atteaux Dyestuffs & Chemicals Co., Limited
The Roessler & Hasslacher Co
A. Klipstein & Co Ltd
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
American Dyewood Co.
T. D. Wardlaw & Son
Watson, Jack & Co., Ltd.

Loom Drop Wires:
Greist Manufacturing Co., The

Loom Pickers:
Barlow, John W. & Co
Garland Mfg. Co.

Looms:
Crompton & Knowles Loom Works
Draper Corporation.
Jefferson, Edward.
Leigh & Butler.
Stafford Co., The
Stephenson, Harry

Loopers:
Harley-Kay, Limited

Machinery:
East Jersey Pipe Co.
Whitehead, Emmans, Ltd.

Machinery Enamels:
Dominion Paint Works, Ltd

Measuring Machines:
Gessner, David.
Jefferson, Edward.
T. D. Wardlaw & Son
Klauder-Weldon Dyeing Machine Co
Saco-Lowell Shops.

Mill Supplies:
Bredannaz, Louis & Son.
Crabb, Wm. & Co.
E. H. Jacobs Mfg. Co.
Garland Mfg. Co.
Jefferson, Edward.
Watson Mfg. Co., L. S.
McLaren, J. C., Belting Co., Ltd.
Dominion Paint Works Ltd.

Napper Roll Grinders:
Roy, B. S. & Son, Company
Leigh & Butler.

Napping Machinery:
Gessner, David.
Jefferson, Edward.
Leigh & Butler.
Roy, B. S. & Son, Company

Netting Machines:
Dubied, Edwards & Co
Spindler, E. O.

Oils, Lard, Etc.:
Lawrason & Co.
McArthur, Irwin, Limited

Oils, Soluble:
British Dyestuff Corporation Huddersfield Ltd.
A. Klipstein & Co., Ltd.
McArthur, Irwin, Limited

Overseaming Machines:
Dubied, Machinery Co
Merrow Machine Works
Spindler, E. O.

Overedging Machines:
The Merrow Machine Company.

Paints—Acid-Resisting, Brick, Concrete, Concrete Floor Hardeners, Canvas Waterproofing, Damp-proofing, Enamels, Fire-Retarding, House, Hot Surface, Machine Enamels, Penstocks, Roofs, Shingle Stains, Mill Whites, Waterproofing, Iron and Steel:
Dominion Paint Works, Limited
Canadian Johns-Manville Co., Ltd.
McArthur, Irwin, Limited
Sharpe C. A. Ltd.

Paint (Heated Surfaces):
Dominion Paint Works, Limited

Paint, Mill White:
McArthur, Irwin, Limited
Dominion Paint Works, Limited

Paint (Bridge and Structural Iron and Pipe Coatings):
Dominion Paint Works, Limited

Paint and Varnishes:
Dominion Paint Works, Limited

Paper Cop Tubes:
Taylor, Chas. F.

Paper Heating Machines:
Gessner, David.

Paper—Protective:
Diamond State Fibre Company.

Pinions:
Diamond State Fibre Company.

Peroxides:
McArthur, Irwin, Limited
The Roessler & Hasslacher Co

Perborates:
The Roessler & Hasslacher Co.

Peroxide of Sodium:
A. Klipstein & Co.
McArthur, Irwin, Limited
The Roessler & Hasslacher Co.

Pickers, Leather:
Garland Mfg. Co.
McLaren, J. C.

Pickers (Shoddy):
Jefferson, Edward.
Louis Bredannaz & Sons
Saco-Lowell Shops.

Picker Pins:
Jefferson, Edward.
Saco-Lowell Shops.

Pulleys—Fibre:
Diamond State Fibre Company

Picking Machinery and Cards:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.

Preparatory Machine (Cotton):
Leigh & Butler.
Saco-Lowell Shops.
Whitin Machine Works.

Pressing Machines (Hot and Cold, Rotary and Apron Cloth):
Gessner, David

Rag Tearing Machinery:
Jefferson, Edward.

Ramie Yarns:
Jefferson, Edward.

Reeds:
Bredannaz, Louis, & Sons

Receptacles:
Diamond State Fibre Company

Ribbing Machinery:
Harley-Kay, Limited.
Scott & Williams.

Roller Covers:
Diamond State Fibre Co. of Canada, Ltd.

Rolling Machines:
Gessner, David.

Roof Paints:
McArthur, Irwin, Limited

Roving and Reducing Frames:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry

Salt:
The Canadian Salt Co.

Scallop Machines:
Merrow Machine Co.
Willcox & Gibb Sewing Machine Co

Scouring:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Klauder-Weldon Dyeing Machine Co.

Scutching Machine:
Gessner, David.

Second Hand Machinery:
Lamb, J. K., Textile Machinery Co
Jefferson, Edward.
Stephenson, Harry

Separators (Yarn):
Draper Corporation.
Whitin Machine Works.

Sewing Machines:
Willcox & Gibbs Sewing Machine Co

Silent Oil:
Borne, Servuiser Co.

Shingle Stains:
McArthur, Irwin, Limited
Sharpe C. A. Ltd.

Shell Stitching Machines:
The Merrow Machine Company

Shuttles:
Bredannaz, Louis, & Sons
Canada Spool & Bobbin Co
Draper Corporation.

Sliders:
Harley-Kay, Ltd.

Silk Machinery:
Crompton & Knowles Loom Works
East Jersey Pipe Co.
Leigh & Butler
Saco-Lowell Shops.
The Stafford Company.
Whitehead, Emmans, Limited.

Sinkers:
Harley-Kay, Ltd.

Sizings:
A. Klipstein & Co.

Sizing Machines:
Gessner, David.
A. Klipstein & Co., Ltd
McArthur, Irwin, Limited.
Sharpe C. A. Ltd.
Saco-Lowell Shops.

Softeners:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co
McArthur, Irwin, Limited
Sharpe C. A. Ltd.
Permutit Company.

Spindles:
Draper Corporation.
Jefferson, Edward
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry
Whitin Machine Works.

Spindle Tubes:
Jefferson, Edward
Saco-Lowell Shops.
Stephenson, Harry

Spinning Caps:
Jefferson, Edward.
Saco-Lowell Shops.
Stephenson, Harry.

Spinning Ring Holders:
Saco-Lowell Shops.
Whitin Machine Works.

Spinning and Twisting Machinery:
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry
Whitin Machine Works.

Spinning Rings:
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Jefferson, Edward
Saco-Lowell Shops.
Stephenson, Harry
Whitin Machine Works.

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Spoolers:
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Saco-Lowell Shops.
Whitin Machine Works.

Spoolering machinery:
Spindler, E. O.
Leigh & Butler.

Spooling and Winding Machinery:
Jefferson, Edward.
Leigh & Butler.
Whitin Machine Works.
Saco-Lowell Shops.

Transfers, Gold:
Kaumagraph Co.

Stamps, Salvage Stamps, End:
Kaumagraph Co.

Steam Specialties:
Sargent's, C. G., & Sons
Canadian Johns-Manville Co., Ltd.

Steaming Machines (Open):
Gessner, David.

Steaming Outfits (Vacuum):
Gessner, David.

Steel Paint:
McArthur, Irwin, Limited

Strap, Lug:
E. H. Jacobs Mfg. Co.

Stretchers (Cloth):
Gessner, David.

Stop Motions:
Wildman Mfg. Co.

Sweater Machinery:
Dubied Machinery Co.
Scott & Williams.
Tompkins Bros. Co.
Spindler, E. O.

Tanks, Tubs and Vats:
Klauder-Weldon Dyeing Machine Co
Gould, Shapley & Muir Co., Ltd.

Tapes, Braids and Edgings:
Jefferson, Edward.

Tartar:
Atteaux Dyestuffs & Chemicals Co., Limited
A. Klipstein & Co., Ltd.

Tartar Substitute:
Atteaux Dyestuffs & Chemicals Co., Limited
McArthur, Irwin, Limited.

Tenter Gigs (Rolling):
Gessner, David.
Jefferson, Edward.
Sharpe C. A. Ltd.
Stephenson, Harry

Textile Soap:
McArthur, Irwin, Limited

Tops, Noils and Waste:
Andrews, H. V.
Canadian Wool Company, Limited
Haigh & Co.
Holdroyd, Harry.
Julius Cohen & Josephy.
Wardlaw, T. D. & Son

Tongue Machines:
Tompkins Bros. Co.

Transfers, Dry:
Kaumagraph Co.

Trucks:
Diamond State Fibre Company

Underwear Machines:
Dubied Machinery Co
Spindler, E. O.
Scott & Williams.
Wildman Mfg. Co.

Underwear Transfers:
Kaumagraph Co.

Varnish:
Dominion Paint Works, Limited.

Ventilating Apparatus:
Philadelphia Textile Machinery Co

Wadding Machinery:
Tatham, Wm. Ltd.

Warpers:
Crompton & Knowles Loom Works
Draper Company.
Saco-Lowell Shops.
Stephenson, Harry
Leigh & Butler.
Jefferson, Edward.

Warping and Beaming Machinery:
Crompton & Knowles Loom Works
Draper Company.
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry

Warp Stop Motions:
Crompton & Knowles Loom Works.
Draper Company.

Washers (Back):
Jefferson, Edward.
Leigh & Butler.
Sargent's C. G. Sone Corp.
Stephenson, Harry.

Washing Machines (Full Width):
Gessner, David.

Water Rectification:
Permutit Company.

Waterproofing Paint:
Dominion Paint Works, Ltd
McArthur, Irwin, Limited

Water Softening Plant:
Leigh & Butler.
Scaife, Wm. B., & Sone Co.
Permutit Company.

Water Cooling Apparatus:
Gessner, David.

Weight Restoring Machines:
Geasner, David.

Whizzers:
East Jersey Pipe Co.
Whitehead, Emmans, Ltd.
Tolhurst Machine Works.

Winders (Cotton, Woollen and Worsted):
Crompton & Knowles Loom Works.
Foster Machine Co.
Harley-Kay, Limited.
Jacob K. Altemus.
Jefferson, Edward.
Leigh & Butler.
Saco-Lowell Shops.
Stephenson, Harry

Winders (Hosiery):
Foster Machine Co.
Harley-Kay, Limited
Jacob K. Altemus.
Jefferson, Edward.
Spindler, E. O.
Saco-Lowell Shops.
Stephenson, Harry

Winding Machines (Cloth):
Gessner, David.
Jacob K. Altemus.

Wool Openers:
Leigh & Butler.
Jefferson, Edward.
Stephenson, Harry

Wood Preservative:
Dominion Paint Works Ltd.

Wool Combing Machinery.
Crompton & Knowles Loom Works.
Jefferson, Edward.
Leigh & Butler.
Sargent's, C. G., & Sone
Stephenson, Harry

Wool and Waste Dusters:
Jefferson, Edward.
Leigh & Butler.
Sargent's, C. G., & Sons.

Woolen and Worsted Machinery:
Crompton & Knowles Loom Works
East Jersey Pipe Corporation.
Foster Machine Co.
Jefferson, Edward.
Klauder-Weldon Dyeing Machine Co.
Lamb, J. K., Textile Machine Co
Leigh & Butler.
Proctor & Schwartz, Inc.
Roy, B. S. & Son, Company.
Sargent's, C. G. Sons.
Saco-Lowell Shops.
Whitin Machine Works.

Wool Washing, Preparing and Drying
Stephenson, Harry
Jefferson, Edward
Leigh & Butler.
Philadelphia Textile Machinery Co
Sargent's, C. G. Sons.

Wool and Wool Stock Dealers:
Andrews, H. V.
Benson, W. T. and Co.
Canadian Wool Company, Limited
Clay, Ferne & Co.
Haigh & Co.
Holdroyd, Harry.
Houghton Wool Co.
Lalor, John M.
Wardlaw, T. D. & Son

Waterproof Case Lining:
Beveridge Paper Co., Ltd.

Wrappers:
Beveridge Paper Co., Ltd.

Wrapping Papers:
Beveridge Paper Co., Ltd.

Yarns, Carpets:
Dominion Textile Co., Ltd.
Beveridge Paper Co., Ltd.
The Guelph Carpet & Worsted Spinning Mills, Ltd.
Hamilton Cotton Co., Ltd.
Haigh & Co.
Holdroyd, Harry.

Yarn Conditioning Machines:
Stephenson, Harry
Jefferson, Edward.
Sargent's, C. G. Sons.

Yarns, Cotton:
Dominion Textile Co., Ltd.
Hamilton Cotton Co., Ltd.
McConnel & Co., Ltd.
T. D. Wardlaw & Son

Yarn Dyers:
Stephenson, Harry
Dominion Textile Co., Ltd.
Hamilton Cotton Co., Ltd.
Wm. B. Stewart & Sons

Yarn Dryers:
Stephenson, Harry
Jefferson, Edward.

Yarns for Elastic Manufacturers:
Dominion Textile Co., Ltd.
Hamilton Cotton Co., Ltd.
T. D. Wardlaw & Son
McConnel & Co., Ltd.
Wm. B. Stewart & Sons

Yarns, Fingering.
Forbes, R. Co., Ltd.
Corke H., & Co.
The Guelph Carpet & Worsted Spinning Mills, Ltd.

Yarns, Glazed:
Dominion Textile Co., Ltd.
Hamilton Cotton Co., Ltd.

Yarns, Hosiery and Knitting:
Corke, H., & Co.
Jos. Clay & Co.
The Guelph Carpet & Worsted Spinning Mills, Ltd.
Hamilton Cotton Co., Ltd.
Forbes R., Co., Ltd.
Bonner-Worth Co., Ltd.
T. D. Wardlaw & Son
McConnel & Co., Ltd.
Wm. B. Stewart & Sons

Yarns, Mercerized:
T. D. Wardlaw & Son
McConnel & Co., Ltd.
Hamilton Cotton Co., Ltd.
Wm. B. Stewart & Sons

Yarns (Woollens):
Corke, H., & Co.

Yarns, Worsted (Warp and Weft):
Bonner-Worth Co., Ltd.
Jos. Clay & Co.
Wardlaw T. D. & Son.
McConnel & Co., Ltd.
Forbes R., Co., Ltd.
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