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Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIV. TORONTO AND MONTREAL, MAY, 1897 No. 5.

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

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Editorial.

THE TARIFF.

The Preferential Clause.

The duties imposed by Mr. Fielding's tariff, while presenting few sweeping reductions such as overwhelm an industry and annihilate it, yet include many changes which are more or less revolutionary in their nature. Of these, the preferential clause is the most important, and of the various industries affected, the manufacture of wool in all its branches is most seriously threatened. The chief sources of our woolen imports, at present, are England, France and Germany. Practically no woolens are imported from the United States, a fact evidenced by the total absence from the textile journals of the United States of any discussion of our new tariff. If, as is hoped, English imports alone come in under this clause, the effect of the reduction will not be so regrettable as it would otherwise be, but still English competition is the most serious to which our manufacturers are subjected, although great quantities of cheap goods come in from Germany and still more are imported from Germany through Great Britain, especially in ready-made clothing, cloaks, mantles, etc. The British producer has many advantages, natural and acquired, over his Canadian rival. Coal is cheap in Great Britain, being both free of duty and produced abundantly in many parts of the island. The absence of duty on any of the raw materials, together with the fact that London is the world's wool market, and that in that country the necessary machinery can be obtained in the greatest perfection at the least cost, makes the manufacture of woolen goods much cheaper than here. Then the advantages arising from climate are great. The coal necessary to heat a Canadian mill would operate an English one, such is the difference in temperature between the two countries. The relative cheapness of labor and capital is too well known to need re-statement. It is manifest that we need a considerable measure of protection against British woolens. The question is, have we enough? Many of our manufacturers say they have not. Then if this is the case, and the British preferential clause is to remain, why not raise the general tariff still higher?

Ad Valorem vs. Specific Duties.

The abolition of specific duties has much to be said in its favor. A specific duty falls more heavily on the cheaper materials, and in so far as it acts as a revenue producer, collects an unfair proportion of the revenue from the poorer consumer. When its effect is truly protective and restrains imports, it tends to stimulate the production of the lowest grades of the materials protected, thus injuring our market at home and our reputation abroad. On the other hand, it is claimed that ad valorem duties tend to cause under-valuation; that the revenue is thus cheated, and our invoice clerks made immoral. Great difficulty has been experienced in collecting ad valorem duties in the United States, but then it has been found impossible to collect an income tax satisfactorily in that country, owing to the fact that in many quarters it is not considered immoral to lie so long as you make a dollar by it, nor to steal in sums of, say, over

$100,000. The *American Wool and Cotton Reporter*, in a recent issue, headed its leading editorial, "Are we a Race of Perjurers?" It would be impolite to answer the question save in the negative, but how is it that income tax returns for New York showed such an alarming and progressive impoverishment of the citizens? But we have no doubt the Canadian tariff duties, however imposed, will be honestly collected. It is also claimed that while the specific duty excludes, or almost excludes, the lowest grade of the classes of goods on which it is levied, such exclusion is in the best interest of the consumer, because he has not skill enough to detect the worthlessness of these wares, and would buy them if they were admitted, to his subsequent loss. If this were the whole truth, and nothing but the truth, it would be in the best interests of Canadian manufacturers to admit the poorest goods, for the consumer who had once bought such goods, "made in Germany" or elsewhere, would at his next purchase demand the more expensive Canadian goods But the truth is that the exclusion of low grade goods only stimulates over-production on those lines and price-cutting. The result is that the general public believes Canadian woolens to be coarse or worthless goods, and demands the "imported" weaves of which such a very large proportion are made in our own mills. The specific duty helps to create the demand for imported fabrics, and feeds that demand where it does already exist.

Touches the Farmer Too.

Now, while in some branches of the textile trades, such as cotton, cordage and binder twine manufacturing, the raw materials of cotton, manilla, sisal, etc., are foreign products and do not touch any home agricultural interest, the woolen industry is bound up with the interests of the farmer. The total annual weight of the native Canadian wool clip has averaged over 11,000,000 lbs. for the past ten or fifteen years. The destruction of the woolen industry would be a serious thing for the Canadian farmer, as he would then be dependent entirely on the American market for his exports of wool. It is true that Canadian goods are not all made from Canadian wool. Considerable quantities of merino wool are imported from the Cape, Australia and South America to mix with the native product, and the result is a cloth which in the main has borne a high reputation. The fibre of Canadian wool is probably stronger than that of any wool in existence, and when made into an unadulterated cloth—such, for instance, as the original Halifax tweed—cannot be surpassed for wearing qualities. It is a lamentable fact that the Canadian tweed of ten or twenty years ago has suffered corruption by the insatiable demands of the wholesale trade for something "cheaper" and "cheaper"; but this process has gone on against the universal wishes and good judgment of the Canadian manufacturer. It will be still more lamentable for the country if an unfair tariff policy gives a further and perhaps final blow to what was once a splendid industry.

A Great Industry.

The woolen and other textile factories are not alone to be considered in making tariff changes, for there is a host of other industries whose prosperous existence is interwoven with the spinning and weaving establishments who supply the raw material in the shape of fibre, yarn and cloth. We give below a partial list of such establishments taken from the last census. The reader who is versed in textile manufacturing will see that there are evident mistakes in classification made by the census reporters, but making due allowance for these, it will be seen that these industries are of great magnitude, and have many ramifications that affect the general prosperity of the people.

	No. of establishments.	No. of employees.	Capital.	Annual Value of Output.
Bag factories	2	52	$ 141,090	$ 265,800
Cordage, rope and twines	21	819	2,370,395	1,723,534
Flax and scutch mills	50	1,521	489 663	709 115
Net making	43	101	812	11 022
Sail making	55	166	68 031	244,940
Tents and awnings	32	206	119,410	425,902
Dyeing and scouring	72	292	355,186	345,504
Mattress making	42	197	78,569	286,053
Quilting factory	1	3	7,000	10,000
Hair-cloth factories	2	21	55,500	37,000
Blanket making	1	12	21,000	75,000
Braid and elastic	3	67	89 950	100,000
Button factories	5	455	169,050	277,500
Carding and fulling mills	441	791	716,223	1,047,259
Carpet making	557	915	301,518	548,619
Corset factories	32	955	459,890	850,500
Cotton mills	22	8,502	13,208,121	8,451,724
Cotton duck factory	1	133	173,000	290,000
Dressmaking and millinery	7,066	17,197	3,044,190	11,111,510
Embroidery	1	33	10,000	150,000
Fringe and tassel works	2	50	12,500	37,000
Hat and fur establishments	192	2,518	2,047,881	5,004,941
Gloves and mitts	44	640	422,018	747 732
Horse blankets	2	56	133,000	165,000
Hosiery factories	58	642	370,970	579,421
Knitting	223	1,501	969,686	1,337,626
Mat and rug factories	6	43	30,820	43 200
Oiled cloth and oil clothing	29	202	247,440	349,684
Regalia making	3	42	21,325	48 000
Shirt and collar factories	157	3 058	1,394 607	2 640 091
Shoddy mills	2	15	8,600	18,000
Silk mills	3	322	520,000	585,000
Suspender factories	6	64	53,700	169,600
Clothing and tailoring	3,982	23,234	8,264,422	22,648,583
Thread reeling	2	41	110,151	180,060
Umbrella and parasol	16	105	47 475	170,862
Underwear	26	123	23,890	65,630
Wadding	4	58	302,650	205,700
Weaving (hand)	2,085	2,445	269,793	631,399
Woolen mills	377	7,156	9,357,658	8,087,871
Wool yarn	1	26	28,000	33,000
	15,669	95,589	$45,483,684	$60,709 002

The total annual wages paid out in these industries was over $16,500,000. *These are very large totals, and* according to the census returns they have doubled since the census of 1881.

MOVING TIME!! Our subscribers are reminded to notify us of any change in address necessary. Give both old and new addresses. THE PUBLISHERS.

Duties on Raw Materials. In connection with a suggestion looking towards the placing of soaps and oils on the free list, a prominent wool dealer called our attention to the fact that degras, a by-product of the woolen industry, is placed on the free list when imported by tanners for use in their own business, but otherwise it pays a duty of 20 per cent. This throws the whole business into the hands of a United States firm, which imports degras from England and Germany, holds it in bond in Boston and retails it to the Canadian consumers. Something should be done to obviate such preferential trade as this.

Free Machinery. When interest rates are as low as they have been for the past few years no business which yields large profits can be carried on long without attracting competition. Woolen manufacturing was very profitable some years ago, and the resulting competition has now cut down prices in many cases below a point at which continued existence under present conditions is possible. The mills which were equipped recently are able to compete successfully in the present market; those which have maintained their equipment by frequent purchases and renewals of machinery are still making something more than the bare interest on the capital invested; those running machinery fifteen, twenty and thirty years old are steadily losing money. The owners of such mills as these do not receive for the work, in many cases, profits amounting to as much as falls to the ordinary laborer as wages. To every manufacturer new machinery is necessary more or less continuously; to the last class mentioned a new plant is at once necessary if they are to remain in business at all, which is problematical. Now it is conceded that the woolen manufacturers will suffer more from the new tariff than almost any other class. Why should not some increased protection be given them by removing the duty from one of the most important of all their materials? Those who are not in need of new machinery will oppose such a reduction perhaps, but it should be borne in mind that they are not the chief sufferers. The man who must have more protection or go out of business is the chief claimant for Government assistance at the present time. The machinery to which we refer as being a desirable addition to the free list, is that used in spinning, carding, wool washing, weaving, finishing and the more expensive accessories of the dyehouse. These parts of a woolen manufacturer's plant are very expensive and are not produced to any great extent in Canada, so that their admission duty free would not damage materially any existing Canadian industry. Carding machinery, for instance, which was quite extensively made some years ago, is not now turned out in any but the most limited quantities, as the small custom carding mill, formerly the chief source of the demand, is now rapidly becoming extinct, and the carding of our large mills requires a class of machinery not produced in Canada at all. Very few looms have been made. One firm which we know has an agency of a well-known loom for the past ten years and has not built one during that time. The beneficial effect of free machinery on the future of the trade would be greater in future even than the present relief it would afford, because our manufacturers would avail themselves of every improvement produced abroad. While the benefit would increase as time went on, the slight handicap placed on mills now well equipped would disappear and the whole industry would be upon a better footing.

Filching their Good Name. The everlasting cry for cheaper goods has brought an evil, but, as we have already said, it is an evil for which the Canadian manufacturer is not to blame. It was a system of degradation brought about in spite of the opinions of the woolen mill owners, who saw that it was impossible for Canadian goods to keep the reputation for strength and durability which had given them their trade in years past. But the wholesale trade has brought a worse thing upon the Canadian woolen manufacturer. He has placed good orders for high-class goods on condition that the name of the mill should not be identified with the goods. The purpose is that these goods should go to the consumer as imported ones. We knew of dozens of instances where manufacturers have dropped into tailor shops and been shown goods which the tailor has solemnly assured them (no doubt sincerely) were imported; but the manufacturers know the goods to have come from their own mills. We know of cases in which experienced salesmen in wholesale houses have been for years selling Canadian woolens as imported without knowing the difference. The assurances of tailors and dry goods salesmen to the contrary notwithstanding, there are large classes of Canadian tweeds, etc., which no expert save the manufacturer himself can distinguish from imported goods, and in selling these as foreign the home manufacturer is defrauded not only of his good name—for these are usually the higher grade of goods—but of his profits on the only lines of goods which now-a-days yield a profit. It may be asked, why does the home manufacturer allow his goods to be sold as foreign? Simply because if he did not permit the wholesaler to dispose of them as he wishes, he would get no orders at all. It is a case of being compelled to "fish or cut bait," as our Yankee friends would say. The only sure remedy is for the Canadian manufacturer to break away from every wholesaler or retailer who insists on concealing the identity of his goods, and sell direct to those who will show goods to the consumer under their true colors. There is no doubt that if every man now living in Canada could have the proof given that the "imported" suit he is now wearing is Canadian goods, the Canadian mills would have a boom recalling the golden days of woolen manufacturing a quarter of a century ago.

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THE TARIFF ON TEXTILES.

The following are the duties imposed on textiles by the new tariff. In each case the old duty immediately *follows* that now imposed:

Cottonbatts, batting and sheet wadding (formerly 22½ per cent.); cotton warps or cotton yarns, dyed or not, 25 per cent. ad valorem, formerly 25 per cent., except No. 40 and under, which was free.

Cotton fabrics, white or grey, bleached or unbleached, 25 per cent. ad valorem.

Cotton fabrics, printed, dyed or colored, n.o.p., 35 per cent. ad valorem, formerly 25 per cent.

Damask of linen, stair linen, diaper napkins, doylies, tray cloths, table cloths, sheeting and sheets, blankets and quilts, towels and like articles of linen or cotton, or of linen and cotton combined, made up or not, n.o.p., 30 per cent. ad valorem, formerly 25 per cent.

Embroideries, laces, braids, fringes, cords, elastic, round or flat, garter elastic, tassels and bracelets, n.o.p., braids, chains, cords or other manufactures of hair, n.e.s., handkerchiefs of all kinds, lace collars and all similar lace goods, lace nets and nettings of cotton, linen, silk or other material, shams, curtains, when made up, trimmed or untrimmed, belts of all kinds, n.o.p., corsets, linen, silk and cotton clothing, bed coverings, and all other articles made up by the seamstress from linen or cotton fabric, n.o.p., 35 per cent. ad valorem, formerly 30 per cent.

Jeans, sateens and coutils, 30 per cent. ad valorem, formerly 25 per cent. when imported by corset and dress stay makers for own use.

Collars and cuffs of cotton, lipen, xylonite, xyolite or celluloid, 35 per cent. ad valorem; formerly 24 cents per doz. and 25 per cent.

Shirts of any material and ladies' or misses' blouses and shirt waists, 35 per cent. ad valorem; formerly $1.00 per doz. on shirts costing over $3.00 per doz., and 25 per cent., others 35 per cent.

Crapes, black, 20 per cent. ad valorem.

Velvets, velveteens, plush fabrics, silk velvets and all manufactures of silk or of which silk is a component part of the chief value, n.e.s., and ribbons of all kinds and materials, 35 per cent. ad valorem, formerly 30 per cent.

Cotton sewing thread in hanks, three and six cord, 15 per cent. ad valorem, formerly 12½ per cent.

Cotton sewing thread and crochet cotton, on spools or tubes or in balls, and all other cotton thread, n.e.s., 25 per cent. ad valorem.

Silk in the gum, or spun, not more advanced than singles, tram and thrown organzine, not colored, 15 per cent. ad valorem.

Sewing and embroidered silk and silk twist, 25 per cent. ad valorem.

Jute cloths, not otherwise finished than bleached or calendered, 10 per cent. ad valorem.

Felt, pressed, of all kinds not filled or covered by or with any woven fabric, 20 per cent. ad valorem, formerly 17½ per cent.

All manufactures of hemp, flax or jute, n.e.s., or of flax, hemp and jute combined, 25 per cent ad valorem, formerly 20 per cent.

Horse clothing of jute, shaped or otherwise manufactured, 30 per cent. ad valorem.

Bags or sacks of hemp, linen or jute, and cotton seamless bags, 20 per cent. ad valorem.

Hair cloth of all kinds, 30 per cent. ad valorem.

Sails for boats and ships, 25 per cent. ad valorem.

Cloths, not rubbered or made waterproof, whether of wool, cotton, unions, silk or ramie, 60 inches or over in width and weighing not more than seven ounces to the square yard, when imported exclusively for the manufacture of mackintosh clothing, under regulations to be adopted by the Governor-in-Council, 15 per cent. ad valorem, formerly 12½ per cent.

Oiled silk and oiled cloth, and tape or other textile, India rubbered, flocked or coated, n.o.p., 30 per cent. ad valorem, formerly 27½ per cent.

Women's and children's dress goods, coat linings, Italian cloths, alpacas, orleans, cashmeres, henriettas, serges, buntings, nun's cloth, bengalines, whipcords, twills, plains, or jacquards of similar fabrics, composed wholly or in part of wool, worsted, the hair of the camel, alpaca goat or like animal, not exceeding in weight six ounces to the square yard, when imported, in the grey or unfinished state, for the purpose of being dyed or finished in Canada, under such regulations as are established by the Governor-in-Council, 25 per cent. ad valorem.

Socks and stockings of all kinds, 35 per cent. ad valorem, formerly 60 cents per doz. and 35 per cent.

Knitted goods, n.e.s., undershirts and drawers, and hosiery of all kinds, n.e.s., 35 per cent. ad valorem.

Shawls of all kinds, railway or travelling rugs and lap dusters of all kinds, 30 per cent. ad valorem, formerly 25 per cent.

Wool, viz., Leicester, Cotswold, Lincolnshire, Southdown combing wools, or wools known as *lustre* wools and other live combing wools, such as are grown in Canada, 3 cents per pound.

Yarns, woolen and worsted, n.e.s., 30 per cent. ad valorem.

Yarns, composed wholly or in part of wool, worsted, the hair of the alpaca, goat or like animal, costing 20 cents per pound and under, 15 per cent. ad valorem, formerly 5 cents per pound, and 20 per cent.

Fabrics, manufactures, wearing apparel and ready-made clothing, composed wholly or in part of wool, worsted, the hair of the alpaca, goat or other animal, n.e.s., (formerly 5c. per lb. and 30 per cent.), blankets and flannels of every description, cloths, doeskins, cashmeres, tweeds, coatings, overcoatings, and felt cloth, n.e.s., 35 per cent. ad valorem, formerly 5c. per lb. and 25 per cent.

Mats, door or carriage, n.e.s., 35 per cent. ad valorem, formerly 30 per cent.

Carpeting, rugs, mats and matting of cocoa, straw, hemp or jute, carpet linings and stair pads, 25 per cent. ad valorem.

Turkish or imitation Turkish or other rugs or carpets, and carpets n.e.s., 35 per cent. ad valorem.

Enamelled carriage, floor, shelf and table oilcloth, linoleum and cork matting or carpets, 30 per cent. ad valorem.

Window shades in the piece or cut and hemmed or mounted on rollers, n.e.s., 35 per cent. ad valorem.

Webbing, elastic and non-elastic, 20 per cent. ad valorem.

Umbrellas, parasols and sunshades of all kinds and materials, 35 per cent. ad valorem.

Gloves and mitts of all kinds, 35 per cent. ad valorem.

Hats, caps and bonnets, n.e.s., and hat, cap and bonnet shapes, 30 per cent. ad valorem.

Braces or suspenders and metal parts thereof, 35 per cent. ad valorem.

Boot, shoe and stay laces of any material, 30 per cent. ad valorem.

Fur skins, wholly or partially dressed, 15 per cent. ad valorem.

Caps, hats, muffs, tippets, capes, coats, cloaks and other manufactures of fur, n.o.p., 30 per cent. ad valorem.

Church vestments of any material, 20 per cent. ad valorem.

ON THE USE OF HIGH-SPEED ENGINES FOR MILL DRIVING.*

BY MARK ROBINSON, M. INST. C.E.

It is impossible that the great development of the high-speed engine for electric lighting purposes, during recent years, should fail to react in some degree upon mill practice, nor is it probable that builders who have achieved so much success in a field which they consider not less difficult than mill-driving, should remain without ambitions towards what everyone must regard as the highest and most famous department of the engine-builder's art. The high-speed engine begins to ask recognition, as a friendly rival, from the famous mill engine builders of Lancashire, and although it may, and must be for many years, but a humble competitor, its approaches are not unworthy the consideration even of men who, with their predecessors, have for the greater part of a century led the world's practice in steam-engine design.

That speeds have already largely increased in mill practice is undoubted. The higher class of work, and the greater nicety of design, which accompanied the introduction of the Corliss system—a system which involved so many other things than valves and trip-gear—made higher speed a possibility. The introduction of the vertical type of marine engine had further influence in the same direction, and the general result has been a speed of rotation in mill work which would have alarmed the old builders of beam engines. Nevertheless, there is no difficulty in drawing the line between mill-engine speeds, as generally understood, and high speed as it presents itself to an engineer accustomed to electric light work. Negatively, we may define high speed as something much higher than present mill-engine speed, but a positive definition is more difficult. In a 600 I.H.P. mill engine, for instance, what is high speed?

Disregarding, as foreign to the scope of this paper, the claims of the steam turbine to drive anything and everything at 30,000 revolutions a minute, or thereabouts—in comparison with which the engines which interest us to-night may be said to differ only in the rate at which they stand still—it appears to the author that, since in electric lighting it is an object to run as fast as possible, it is reasonable to take as a standard the highest speed found to be practically successful in dynamo driving. This is about 300 revolutions per minute for a condensing engine indicating 600 H.P.—corresponding in the same type of engine, with a speed of something over 200 revolutions per minute for 1,200 or 1,400 H.P.

A large number of single-acting engines of 600 I.H.P. (but able to indicate more) are in successful use, or are under construction, for driving dynamos at the speed named—viz., 300 revolutions per minute—and many others have lately commenced to run, or are being made, to indicate from 700 to 800 H.P., at about 270 revolutions per minute. So far as the author is aware, there is no proposal (as regards reciprocating engines) to use higher speeds than these; on the other hand, such speeds have proved quite satisfactory in practice, and are known to be suitable even for electrolytic work, where provision has to be made for runs of many months without shutting down at all. It seems not unreasonable, therefore, to take the above figures as standard high-speed figures—viz., 300 revolutions for 600 I.H.P.; 270 revolutions for from 700 to 750 I.H.P.; and about 200 revolutions for larger engines of from 1,200 to 1,400 I.H.P. It will be noticed that they represent, at least as regards the smaller sizes, rather more than three times the speed of present advanced practice in mill-engine work, or perhaps four times the speeds still preferred by many builders of double acting engines.

The time has passed when it was necessary to defend the position that high speed of rotation is a good thing in the abstract. Its advocates have now only to show that its advantages are not outweighed by drawbacks in other directions. Those advantages need be but briefly touched upon. Amongst them are: (*a*) Small size and lightness, involving considerable saving in the cost of foundations and buildings, and in space occupied. (*b*) Evenness of turning moment, due to the larger number of impulses given to the crankshaft per unit of time. (*c*) Reduction of initial condensation, due to the shortened exposure of the cylinder and port surfaces to the temperature of the exhaust steam.

The reality of these advantages cannot be contested, though the extent to which they come into force, and their value in comparison with possible drawbacks, are open to argument, and will need consideration at the proper time. There are also certain other advan-

*Paper read before the Manchester, England, Association of Engineers.

tages which will be claimed for the high-speed engine later, in the shape of remarkable absence of wear and freedom from trouble in management. These arise, however, not from the merits of high speed in the abstract, but from the peculiar features of a particular type of high-speed engine; they will not, therefore, be referred to now. On the other hand, it may be pointed out that a fast-running engine sometimes helps the design of the mill gearing, by getting rid of large ratios between the rope pulleys, and so of large pulleys themselves, and that it also opens up possibilities of using high-speed shafting generally, and coupling an engine direct to each principal line. The arrangement of matters outside the engine itself is not, however, within the scope of this paper, nor can the author claim competency to speak upon it.

The disadvantages, in the abstract, of running an engine very fast will be obvious to engineers accustomed to double-acting engines. Wear on brasses, knocking, increased wear, and ultimate breakdown, with the alternative of endless setting-up and adjustment of brasses, are the sequence of ideas which will present itself to an engineer accustomed to large slow-running engines; "backlash" goes far to sum them up. Then from the economic point of view, he will portray to himself a diagram which shows wire-drawing in the steam passages, and a throttled exhaust; or, if these evils be remedied by larger passages and valves, then he will foresee a clearance so large as to be in other ways fatal to economy. Moreover, his favorite trip-gear is plainly out of court; his well-tried Corliss valve, unless in forms which are Corliss valves only in name, is inapplicable, and he hesitates to believe that equal economy will be obtained by other methods. If given to historical research, he will find many complaints of high-speed engines as "steam-eaters," and will learn that high speed was once, *ipso facto*, accepted as proof of wastefulness. In the end he will probably subscribe to the many objections which from time to time have been brought forward, and which may fairly be summarized as:

(I.) Want of economy, through the relatively large clearance due to short stroke, through wire-drawing in passages, and from other causes.

(II.) Rapid wear in brasses and other wearing parts.

(III.) Consequent frequency of adjustment and general trouble in management.

(IV.) Difficulties with lubrication, and hence,

(V.) Excessive amount of attendance required.

(VI.) Noise and vibration.

It must be allowed that this list of evils is a fair deduction from the behavior of ordinary engines when run unduly fast, and is what might be looked for in a high-speed engine based only upon low-speed models. Needless to say, the successful high-speed engine of to-day is of a very different pattern, and the differentiation extends to almost everything about it.

Taking the objections seriatim, let us first deal with (I.) the assumed want of economy of steam. A high speed engine must be, by the nature of things, a short-stroke engine, and if the usual clearance is given in the cylinder, it will bear a larger proportion to the total cylinder volume than if the stroke has a more normal relation to diameter. The port clearance, which is manifestly proportioned to the diameter of the cylinder, and not to the stroke, will suffer a like proportionate increase when comparison is made with a long-stroke engine.

Here, for the first time, it is necessary to cease to speak of the high-speed engine in general terms, and to direct attention to one type of it, viz., the single-acting engine working in "constant thrust," for by adopting this type the question of cylinder clearance at once ceases to trouble. In a constant-thrust engine it is from the mechanical point of view immaterial how small the clearance is made, for whatever wear may take place in the brasses acts only to increase the clearance, and has no tendency to produce a foul. With much wear, and consequent increase of clearance, economy might fall off, but the answer is that in a good constant-thrust engine the wear of brasses is utterly negligible; that the original cylinder clearance may safely be not more, but much less, than in a slow-running (double acting) engine; and that, without gross carelessness or mismanagement, this small clearance will not be sensibly increased by wear.

Specialization has thus begun, though constant thrust, as will be shown later, is justified by other and weightier reasons than effect upon clearance. At this point the nature of the constant thrust may be indicated, for the benefit of those not acquainted with it. If in a single-acting engine, taking steam only on the side of the piston most remote from the crank-shaft, care is take to cushion the piston during the second half of the non-effective or return stroke, the big-end brasses will be constantly pressed against the crankpin during the whole revolution; there will be similar constant contact at the other end of the connecting rod; and the crank-shaft also will press continuously against the main-bearing brass farthest from the cylinder. There will be no "pull-and-push," nor any change in the direction of the pressures, and since the wearing surfaces never separate from each other, "hammering" becomes impossible; there can be no backlash, no "lost motion," and as a fact there is practically no wear. No doubt constant thrust is in a sense constant grind; the surface of the brass is never relieved, though that of the rotating part is out of contact with the brass more than half its time. As the surfaces do not separate, there is none of what has been described as the friendly lift that lets the oil in, and undoubtedly brasses which are work in constant thrust ought not to be loaded as heavily as the brasses of double-acting engines in which there is more or less back lash. But given a sufficient surface, there is not only no difficulty with the brasses, but there is considerable superiority in this respect in the single-acting as compared with the double-acting engine; with fair lubrication there is practically no wear at all, and, of course, no fear that a clearance once fixed will be ap-

preciably increased by wear. If these statements be thought startling, the proofs are in the room, but the subject belongs really to a later section of the paper—that touching upon durability, where it shall be fully dealt with.

But if constant thrust indirectly saves the high-speed short-stroke engine from the reproach of excessive cylinder clearance, and even enables it to turn the tables on its rivals, other means must be found to limit excessive clearance in ports. In engines such as marine engines, where either slide valves or piston values of ordinary type are used, the port clearances are necessarily great, and when combined with short stroke, the clearance ratio under such conditions becomes very bad. The adoption of the Corliss valve would afford a satisfactory remedy as regards clearance, but at the cost of giving up its best feature, the trip-gear, which, of course, cannot be worked at very high speed. Probably the best valve of all for smallness of port clearance is the Willans "central valve," which is a piston valve working inside the piston rod, the latter being hollow; the port clearance is only that due to the thickness of the walls of the tubular piston rod. This feature, peculiar to one type of high-speed engines, removes all remaining objection on the score of clearance; one high-speed engine, at least, short as its stroke is, can hold its own under this head with any long-stroke rival, and yet allow ample port area to prevent wire-drawing.

A sounder objection to the high-speed engine is that, owing to its smallness, the cylinder surface is considerable in proportion to the enclosed volume of steam; hence initial condensation tends to increase. The objection would be a valid one, were it not that the high speed of rotation, to which the smallness of the cylinders is due, also reduces the condensation, and in a far greater degree than the relative largeness of the surface increases it. It is by reduction in initial condensation that the best examples of high-speed engines achieve their remarkable economy—*i.e.*, through the shorter exposure of the cylinder surfaces to the cooling effect of the exhaust at each stroke, and then through the shorter exposure of the incoming steam to the surfaces thus cooled; the surfaces are cooled less, and the hot steam is exposed to them for a shorter time.

Explanations of causes have their interest, but as the present object is merely to show the groundlessness of the view that high speed engines are necessarily uneconomical, it will be better arrived at by recording the result of an actual trial of a triple-expansion high-speed engine, tested after about six months' working. The figures have been published before, but they will bear repeating. The engine tested indicated about 500 I.H.P., and it has driven the flax mill of Messrs. Gunning & Campbell, Limited, of Belfast, for about three years past, without hitch or accident; the steam consumption was frictionally below 12.5 lbs. per indicated horse-power per hour. This engine has been referred to because it is the first Willans engine constructed belonging to what is called the new series—*i.e.*, engines specially designed for condensing work, with cylinder ratios based upon the results obtained by the late Mr. Willans shortly before his death, in his well-known experiments upon the economy of high-speed condensing engines. It may be remembered by those familiar with his posthumous paper on "Condensing Trials," read before the Institution of Civil Engineers, in 1893, that figures nearly as good as those of the Belfast engine were obtained with a little engine indicating less than 30 H.-P., with which the trials were carried out. In view of figures such as these, and of the experience gained with many hundreds of central-valve engines running for years past in numerous electric-light stations and other places, it is obvious that the charge of want of economy against high-speed engines cannot be maintained, and that under this head they may justly claim an equal place with the best types of slow-running engines.

It cannot be doubted, however, that the economy of the high-speed engine is not generally accepted in the North. A Northern electrical engineer, speaking of course of dynamo driving, said: "As to the economy of rope-driving over direct-driving, *there could be no question*"—that is to say, he made the direct-coupled and presumably high-speed engine a present of the power lost in rope transmission—5 per cent., or more probably 10 per cent. when extra bearing friction is taken into account—and supposed the Corliss engine to be even *then* greatly superior in economy to the other. As a fact, the author has never been able to hear of a rope or belt-driven plant in which the combined efficiency came within 10 per cent. of that of the best direct coupled sets; and where it has been possible to obtain figures of actual steam consumption per unit of electrical power produced, the difference in favor of the high-speed engine has been much greater. The assumption that direct driven plant is only used in cases where space is more valuable than economy (for the "extra annual cost of running" the direct-coupled plant is treated as though everyone accepted it) is calculated to astonish nineteen out of twenty of the electrical engineers of Great Britain, including those responsible for the light stations of such cities as Liverpool, Bradford, Birmingham, Brighton, Bristol, Hull, Edinburgh, Glasgow, and many other first-rate towns. Why, even in America, the last home of belt driving, it is becoming obsolete, and nothing but direct-driven plant is projected for important stations, while the same view, if the author is not mistaken, now obtains amongst the engine-builders of Lancashire, though the engines they couple direct are low-speed and not high speed engines.

(To be continued.)

THE Speaker and Sergeant-at-Arms of the Dominion House have inaugurated a new departure They have quit wearing kid gloves except on high occasions. It seems Mr Edgar wrote over to England concerning the practice there, and having found that the lavender gloves had been abandoned he decided to follow suit in Canada. Heretofore a Speaker would use two dozen pairs in one session, and the sergeant and his deputy not less than three dozen pairs.

For THE CANADIAN JOURNAL OF FABRICS

A CARDER'S CONTENTIONS.

BY "PRACTICE."

Every carder knows what advantages there are in working new, sound and healthy wool, which is evenly graded and nicely sorted, especially so when it comes to him open, clean and free, and retaining its full natural strength. Yet there are many who suffer the most bitter experience in endeavoring to get it into such a condition. There are a number of causes which prevent what was originally good stock from reaching the carder in the proper condition to be easily worked into good roving. Even when these are understood and admitted to be sources of mischief and injury, it is not always easy to have them remedied. It may be hard water, or too little or too strong a head of water for rinsing, that ties or braids all the stock rinsed into knots. Possibly it may be due to the want of a duster to open the wool before scouring; too hot, or too strong liquor in washing machines, an antiquated and wornout burr picker, a small or inconvenient picker house, or small pay that drives away all but poor and untrustworthy operatives. Perhaps the stock is weakened or otherwise injured by the incompetence of a cheap dyer, or the cheaper dyestuffs which are given him to work with. All or any of these causes operate disastrously upon the work of the carder, and one or more of them are frequently met with in mills at the present day. They are well defined, oft recurring, persistent and often aggravating to the last degree.

The only mysterious thing about these difficulties is that it requires such oft-repeated experience, with the mischief resulting from them, to impress upon the responsible parties the necessity of avoiding them. It matters not if under such disadvantages former carders have failed to obtain good results; if better and more work is desired it often happens that no improvement will be made in the preliminary manipulations where it is so important, simply because it is regarded as of small consequence. If it is made it is generally so slight, or it is made so slowly and gradually, that its full benefit is never felt and appreciated by the carder.

Surprising as these statements may be to those who are not handicapped in this fashion, but who are employed in mills where all these drawbacks are foreseen and avoided, there is another phase of mismanagement still more strange and unaccountable. The majority of the mills to-day run on certain lines of goods, the only variety being in the different styles that can be brought out in that particular fabric; these goods are sold on orders, and are required to be an exact reproduction of samples already made and exhibited. It is surprising that so many managers will venture to make changes employing different woods and stocks, altering the percentages, the oils, soaps and dyestuffs, even while working off an order in the middle of the season. They do not seem to care whether the experiment is made right in the middle of an order or not; of course, the margin of profit to a great extent determines the quality of the raw material which can be put in the fabric, but it is equally true that the quality of the stock can be so far reduced as to actually increase the cost of manufacture to such an extent that it will more than offset the saving made in using cheaper material. There is decreased production, the expense of reworking, the excess of waste, which always comes from working poor material, to say nothing of imperfect goods which must follow. It is, of course, natural and proper to expect that the best possible results should be obtained from any grade of stock given to the carder, but it is an injury and an injustice to him, as well as the manufacturer, to require the former to do good work with inferior stock, when the same goods can be made just as cheaply when better material is employed.

THE PRACTICAL DYER.*

BY JAS. SCHOLFIELD.

The practical dyer can improve the appearance of everything he does, or it would be useless to pay the expense of dyeing. The general appearance of goods, the first impressions, are one-half the sale to the salesman. If we can use a grade of yarn to produce a shade that costs 20 per cent. less than the yarn we are using, even though such would increase the cost to our department 5 per cent., or if we could make the goods worth 20 per cent. more by adding 5 per cent. extra cost to the dyeing, it is our duty to do so; we make for our master 15 per cent. in either case, and he will eventually give credit where it belongs. To be able to dye a dress black, blue or brown, does not make us practical dyers; to be able to dye a few pieces of cloth or a few hundred pounds of yarn per day, will not make us practical dyers. Our mothers could dye good blacks, blues or browns, yet never claimed to be practical. Our helpers can dye a few pieces of cloth or a few batches of yarn, but do not claim to be practical dyers. The practical dyer of thirty years back would not do to-day, unless he had kept up with the new discoveries; his methods would be too slow and too expensive for the demands of to-day. In those days the dyer used different drugs from what he has at his disposal to-day. During the last thirty years dyestuffs have undergone a complete change through the combined efforts of the chemist and the practical dyer. The one discovered, the other has made the discoveries practical. Berthollet was all that could be desired in France in 1780, and could justly claim the title of practical dyer, but his recipes to day are valueless except as relics of bygone days. Bancroft, Napier, O'Neal and others were practical men in their day, and deserved credit, praise and honor for what they have contributed to the trade, but we live later. The practical dyer must have courage to acknowledge a fault however trivial, and not act cowardly by throwing the blame on some one else, as well as to resent blame that belongs to some other department and which is

* A paper read before the Dyers' Mutual Improvement Association.

very often blamed on the dyer. Oftentimes he loses his position through lack of courage. He must have courage in ruling his help; if bad help, courage to discharge them; must insist on his commands being carried into effect. Oftentimes things go wrong in the dye house through disobedience. If bad drugs, have courage to condemn them; if fault to find with the goods, have courage to find fault; you will be working for your master's interest, and he cannot help but appreciate your motives. The practical dyer must be a careful man, always watching for opportunities to maintain good work throughout his department. Show me a careless overseer, and I will show you careless help. On the contrary, a careful overseer will never have careless help. Rule of thumb and guess work days are gone by. Revive them and you can be sure that one-half of your dyestuff will flow down the sewer; your mismatches and consequent re-dyes demand the use of more dyestuff, more steam, time, and in the end you will have lots of rotten and tender goods.

LOW GRADE GERMAN WOOLENS.

The following suggestions for the manufacture of low grade woolens for export to South America which appeared in *Oesterreich's Woolen-u Leinen-Industrie*, affords a clue to German success in the markets of the world. It being essential that these qualities should, for the markets in question, have a certain degree of elegance and resemble (at least at a distance) the better class goods, the first point to be looked to is the exclusion of dull or lustreless wool. Cheapness is secured by employing ⅔ medium fleece wool and ⅓ noils, or equal portions of fleece, Cape (or Buenos Ayres) wool, and noils. A portion of the latter may be replaced by ends and trimmings, provided these are well cleaned to prevent inequality of dyeing. Spinners' waste is best worked up for blacks, and should be evenly distributed, so as to ensure regularity of color when dyed in the piece.

The following widths and weights are most current:—

1. 570-580 grams per metre, 120 centimetres finished width (47 inches, 18½ ounces per yard), 1,750 porter threads per width of 210 centimetres (82⅝ in.).

2. 630 640 grams per metre, 130-132 centimetres (52 inches, 20½ ounces per yard), 2,100 porter threads per 220 centimetres (86½ in.).

3. 670-680 grams per metre, 138-140 centimetres (21¾-22 ounces per yard, 55 inches wide), 2,400 porter threads per 236 centimetres (93 in).

All three being made of the same yarns, viz., warp, 5,740 yards per lb.; weft, 3,725 yards per lb.; tightly woven with closed shed and smooth selvage.

The yarns should be softened with olein and washed with soda before fulling. After carbonizing, the goods are fulled with good potash soap to preserve the softness of the material, the pieces being then about one inch narrower and 2¼ yards shorter than when finished; the width is recovered in lustring, and the length in raising. In the latter operation it is important to keep the goods flat, so, if inclined to pucker or bulge, they must be dried and stretched before rolling. Five or six passages through the raising machine (fitted with used carders) will suffice, and the goods are then rolled and steeped for two or three hours in water at 90° C., opened, washed, dried and cropped to leave a medium pile. Blacks, browns and dark greens are lustred before dyeing, but blue and drabbed goods are dyed first. Most of the cloth (except black) being preferred with yellow selvages, colors giving a yellow with nitric acid should be selected. For blacks, Campeachy with blue and white vitriol, finished with Campeachy and fustic; or, naphthol black, with acetic acid and acid green, are employed. The other principal colors in vogue are green, drab, and dark, medium and light blue, a preliminary bath of indigo being employed for the three latter.

Goods not previously lustred are now treated and washed, and all are then subjected to the final cropping, which should not be too short, three to four passages being sufficient. After brushing and examining, any defects are made good by the needle, the goods are pressed, lustred for two or three minutes, and quickly cooled; the selvages are mordanted with nitric acid, and the whole submitted to a final brushing and cold pressing.

MEANDERINGS IN MERRY ENGLAND.

(*Correspondence of* CANADIAN JOURNAL OF FABRICS.)

No. 4

Though Manchester is 162 miles from London (or about the same distance as from Toronto to Kingston), a London and North-Western express will take you there in three hours and a-half; and you may start from Euston station for the great cotton city almost any hour of the day. There are two things Manchester has a great reputation for—yea, for three things hath its name gone abroad. (1) The city and suburbs taken together have a denser population than any similar area in the world; (2) it is the seat of the largest textile trade in the world, and (3) its climate is the rainiest, muckiest, murkiest under the canopy of heaven. I believe it rains 25 hours out of every 24 the whole year round, and on holidays there is a double downpour. The fact of this being the centre of the waterproof clothing and umbrella trade of the Kingdom appears to have no effect on the climate. And yet Manchester has attractions peculiar to itself. Aside from the lingering bits of "Old Manchester," as quaint as any sections of Old London, contrasting with the fine architecture of the public buildings of the modern city, it has many beautiful parks and interesting public institutions, while many of its suburban towns and villages are lovely, with many bright sunny days sandwiched between the days of weeping skies. And Manchester and its surroundings are almost as democratic

as any Yankee could wish. The silk hat is not essential to success in business, and you can often get access to the head of a Manchester house with as little ceremony as is required to see the Governor-General of Canada, whereas it is easier to get at the Sultan of Turkey in the recesses of the Yildiz palace, or the Shah of Persia in the palace of Teheran, than to get an interview with some heads of firms in London and Birmingham, and it is certain that the Sultan or Shah will receive the stranger with much less reserve than some of the Shieks ul-Islam and Shah-in-Shahs of English commerce.

It was on a fine Saturday afternoon when I arrived in Manchester, and business being practically suspended in the summer on Saturday afternoons, except in the retail trade, a friend kindly provided me with a bicycle with which to see some of the suburbs. England is the ideal country for the bicycle tourist. In summer the showers are usually not long in duration, though they may be frequent, and the roads are so well drained that they dry off very quickly; and no country in the world can beat England for the uniform good quality of its roads. When you have good roads, generally free from dust, and when you have mellow skies, moderate temperature, frequent wayside inns, with cheap, good food, easy grades over hills and into valleys, pretty roadside cottages, charming gardens, delightful dells, proud rural palaces, quaint villages, ancient towns, ivy grown churches and secluded churchyards, parks vocal with singing birds, and over all the spell created by the recollections of England's past, what more could the cyclist have to make a rural tour a dream of delight? Every parish, every village, every hamlet has its history stretching into a more or less hazy past; every district has its local customs and traditions its idioms of speech, its local heroes, its family names, its legends, its mysteries. Even the names of the roadside inns would keep one in amusement for a month of travel. Here, for instance, are some names of inns which I jotted down at various times, though the selection is not as good as might have been obtained had I made the subject a study, nor could I reproduce the quaint and comical pictures painted on many of these signs to represent the ideas or animals designated: "The Bleeding Wolf," "The Jolly Thrashers," "Cat and Fiddle," "Bull and Butcher," "Cock and Trumpet," "Bull and Royal," "The Ramping Lion" (called in ridicule of the painting, "The Romping Kitling), "The Moor Cock," "Bull and Gate," "Dog and Duck," "The Frozen Mop," "Holy Lamb," "Blazing Tub" (now "The Glass Barrel"), "The Green Man," "Blue Pig," "Crown and Gloves," "The Beefsteak," "Roastbeef," "Whistling Pig," "Cheshire Cheese," "Legs-of-Man," "Clockface Inn," and "Friend and Pitcher." I could not find out why an inn was called "The Case is Altered," but one hostelry called the "Goat and Compasses" derived its title from the corruption of a family motto, "God Encompasses." One inn is called "The Four Alls"—King, Bishop, Soldier and Doctor, explained thus: King—I rule you all; Bishop—I pray for you all; Soldier—I fight for you all; Doctor—I cure you all.

The quaint guide boards, signs and epitaphs are also a study for the cyclist in search of the curious. At Arley, near Knutsford, some miles out of Manchester, is a cemetery devoted to horses. I did not learn the qualifications necessary to entitle a horse to sepulture in this peculiar cemetery; whether he had to be distinguished in war or in civic life; whether it was reserved for the equine aristocracy, or whether burial could be obtained by those who began life without a penny in the world, but who worked their way to the front rank by sheer force of character—who, in fact, were self-made horses. Some no doubt said neigh to the temptations of life, and we may be sure some died in the harness. At all events a good many were buried here, and among the epitaphs some are worth noting. One was called "Salt-Fish," and this was his inscription:

For hungry worms here lies
A noble dish—
Horseflesh by nature, and
By name "Salt-Fish."

Another to a horse called "Shadow" is as follows:

In this pony the whim of his mistress was shown,
When "Shadow" she named him, tho' good flesh and bone;
So her carriage whene'er it came round to the door
Like a coming event, cast its "shadow" before,
Nothing left save the bones which lie under this clay;
Like all shadows, this "Shadow" has now passed away.

TENSION REGULATORS.*

Irregularity of tension upon warp threads is a source of trouble in all systems of warping, for the speed at which a machine may be run is limited by the strain the yarn will stand, and by the amount of slack given off when the machine stops. In beam warping, the speed of winding being uniform and the tension unequal, it would be remarkable if attempts had not been made to supply yarn to the back beams equally tense throughout. The following are two of several plans applied for this purpose. An American machine is driven by a pair of parabolic cones; the strap upon them is actuated by a feeler bearing against the yarn upon the back beam, and in such a way that, as warping proceeds, the strap is automatically moved to reduce the surface speed in the drum. Every time an empty beam is put in, the strap moves upon the cones to a fixed point. But for this contrivance to satisfactorily perform the work it was designed to accomplish, it is essential that the bobbins in a creel give out on the completion of a back beam, and that, at any given time, they are all uniform in diameter. Since the latter is seldom, if ever, the case, it does not follow that the threads will be equally strained at all times, yet the tendency to overrun will be checked.

In 1892, Messrs. Hollingworth and Mitchell obtained a patent for a system of driving each bobbin separately from a surface drum, and all the drums to receive motion from the warping machine in such a manner that, as it starts and stops, the bobbins simultaneously act in unison, without straining the threads or allowing them to run slack. The invention consists of a vertical shaft, which is provided with bevels to correspond with the number and positions of the tiers of bobbins in the creel. Each bevel drives a horizontal shaft of a length commensurate with that of the creel; and opposite every bobbin, in one horizontal row, a bevel is secured, which engages with a similar bevel compounded with a surface

*Reprinted from the *Textile Recorder*.

drum. The bobbins are severally laid horizontally upon these drums; they are supported by skewers, which rest against inclined surface guides, each guide being notched at the top to hold a bobbin out of contact with its drum whenever desirable. If a bobbin rests upon a drum, it is turned by the frictional contact of the yarn and the drums—hence the revolutions of a bobbin increase in proportion as their diameter decreases.

When applied to sectional warping, the speed of the upright shaft is increased to suit the increasing circumference of the warp section, and, as a consequence, the threads unwind throughout at the same relative speed as they are wound upon the warping machine. This is provided for by driving the upright shaft from a pair of conical pulleys, to one of which an endwise motion is imparted.

THE OPERATION OF BEAM WARPING.

In conducting the operation of beam warping the first considerations are the number of back beams to be made for a set, and the number of threads on each. These are determined by the capacity of the creel, the count of the yarn, and the length to be put upon a beam. Thus, if 2,400 ends are needed for the web, with 24 added at each side for selvages, and if the creel is capable of holding 512 bobbins, at least five beams will be needed; but if the yarn is coarse in count, and the length great, six or more beams may be necessary. Assuming six beams are to be made, then the number of bobbins to be creeled is $2,400 \div 6 = 400$ for the body, and $24 \div 6 = 4$ at each outside for selvages—the latter being generally of different count, or quality, from the former, are treated separately. In many cases they are omitted altogether in warping, and are added at the sizing machine. Now in creeling these bobbins, the warper will be careful, not only to place an equal number in each half of the V, but to so place them that the minimum of difficulty will be experienced in manipulating them. For instance, a creel for 512 bobbins may have 16 tiers; in that event $512 \div 16 = 32$ staves, or 16 on each side of the centre. Of these 204 bobbins will fill 12 and $\frac{12}{16}$ staves on one side, that partially filled to be nearest the outside. Or, if by leaving the bottom and top tiers of every stave empty the bobbins would be within easier reach of the warper, such a course could be adopted, and $204 \div 14 = 14$ and $\frac{14}{16}$ staves required on either side of the centre. This point being decided, filling must be proceeded with, and it is usual, when standing inside the creel, to first fill the left hand staves and then the right hand ones, by placing number one selvage bobbin and its skewer in the outside stave and the bottom tier of those to be filled. Then to continue to fill successive tiers until that stave has its full complement of selvage and body yarn, after which a bobbin is placed in the bottom tier of the next stave, and this order continued until one of the two centre staves is filled. At this point the creeling is reversed by beginning at the top of each stave, and creeling downwards to the end. As in mill warping, the ends from every bobbin should unwind from the top.

The threads are next drawn singly through the dents of an expanding reed, by beginning with the top bobbin in one of the front staves, and passing its thread through the centre dent; from whence the threading for successive bobbins is outwards in both halves. The yarn is next passed over or under the several rollers, the threads are dropped singly into the comb, and simply wrapped round the wood of the back beam. After which the measuring motion is adjusted and the first beam filled. To warp each of the remaining beams the whole operation is repeated, since it seldom happens that more yarn can be drawn from one bobbin than will fill one beam. The warp is then ready for the sizing machine.

As elsewhere mentioned, a beam warper is used to prepare other than grey yarn, as, for instance, bleached, uniformly colored, and—where considerable lengths of one pattern are frequently called for—striped materials. For the last-named warps some manufacturers prefer to separate the colors, and wind the required number of threads of each upon one back beam; then in the winding-on process the threads from the several beams are drawn between the dents of a reed to correspond with the color pattern. Others favor the practice of warping the threads to the pattern.

An example of creeling for the last named will be appropriate at this stage, and for the sake of comparison a pattern already used for mill warping will be repeated, namely—

12	threads of	grey.
12	"	straw.
4	"	yellow.
12	"	brown,
8	"	red
12	"	purple.
12	"	blue.
72	threads per repeat.	

Assuming 2,592 threads + 24 at each side for selvages to be needed, then $2,592 \div 6$ beams $= 432$ pattern bobbins, and $24 \div 6 = 4$ selvage bobbins at each side. Since in winding the yarn upon the weaver's beam the first threads from each back beam will be brought together, it is obvious that to range the colors correctly a special method of creeling must be adopted. Further care is necessary to so place the bobbins that the least possible alterations will be entailed.

Probably the best method of procedure is to divide a piece of paper into as many longitudinal spaces as there are beams to be filled, and to number the beams progressively, as in the accompanying example, where 1 to 6 represent the beams. Then follow with the 24 selvage bobbins by writing under each number in succession the letters, Sel.; repeat them four times $\because 6 \times 4 = 24$. The selvages are followed by 12 threads of grey, written G, and they furnish two threads to every beam; the 12 straw threads (S) give two more threads to each beam; they are followed by four of yellow (Y), which are placed on beams 1, 2, 3 4; then the first of 12 brown (Br) is found on beam 5, the last on beam 4. Continue the plan of always marking from 1 to 6 until the pattern is complete, and place 24 selvage bobbins in position at the bottom of the ticket. This scheme is given to the warper, who proceeds to creel the bobbins for No. 1 back beam, in accordance with the arrangement shown in column 1. But many repeats of the body pattern will be needed to give 2,592 threads. Since there are 72 to a repeat, $2,592 \div 72 = 36$ repeats; also, since $72 \div 6 = 12$ bobbins to a repeat, there will be $36 \times 12 = 432$ body ends on each beam, and $4 + 4 = 8$ selvage ends, or a total of 440 bobbins in the creel. Each of the remaining beams is creeled from its own number on the ticket.

Beams....	1	2	3	4	5	6	
Colors...	Sel	Sel	Sel	Sel	Sel	Sel	1 repeat 24 selvage bobbins.
"	Sel	Sel	Sel	Sel	Sel	Sel	
"	Sel	Sel	Sel	Sel	Sel	Sel	
"	Sel	Sel	Sel	Sel	Sel	Sel	
"	G	G	G	G	G	G	36x12=432 pattern bobbins.
"	G	G	G	G	G	G	
"	S	S	S	S	S	S	
"	S	S	S	S	S	S	
"	Y	Y	Y	Y	Br	Br	
"	Br	Br	Br	Br	Br	Br	
"	Br	Br	Br	Br	R	R	
"	R	R	R	R	R	R	36 repeats
"	P	P	P	P	P	P	
"	P	P	P	P	P	P	
"	B	B	B	B	B	B	
"	B	B	B	B	B	B	
"	Sel	Sel	Sel	Sel	Sel	Sel	1 repeat 24 selvage bobbins.
"	Sel	Sel	Sel	Sel	Sel	Sel	
"	Sel	Sel	Sel	Sel	Sel	Sel	
"	Sel	Sel	Sel	Sel	Sel	Sel	

In the warping of colored and also certain grey yarns it is sometimes necessary to form a lease. This can be accomplished in various ways, as, for instance, by the employment of a leaded reed instead of a comb, for such a reed if moved up and down will separate the threads alternately; but since a reed requires threading, more trouble is experienced in warping with it than with a comb, as the threads are simply dropped into the teeth of the latter To prevent this difficulty special combs are constructed, which

have a piece of reed wire soldered or riveted upon alternate teeth, and so shaped that if the comb is moved laterally in one direction, the added wires will hold half the warp threads in the manner of a hook, when a downward movement of the comb will pull them with it. By the opposite lateral movement the same threads rest upon the tops of the added wires, and an upward movement will lift them, thus forming an end and end lease.

SECTIONAL WARPING.

Although the beam warper is capable of producing long colored warps cheaply, yet it was soon discovered that the comparatively short lengths so frequently demanded could be more expeditiously made upon the mill, since in the latter one creeling would suffice, but in the former, two, three, or more creelings were essential. It was believed that if warps could be made in sections, all of which were uniform in length and diameter, and with the thread arranged as needed in the fabric, they would possess superior weaving qualities to a mill warp, and could be made with less trouble than on a beam warper Hence, sectional machines were introduced with the view of cheapening the process by substituting female for male labor, and of improving warps by rendering twisted half beers and irregular lengths impossible. This idea is by no means a new one, for so far back as 1837 John Potter obtained a patent for a sectional warper, the driving of which was affected by cone drums, so as to maintain an approximately uniform winding speed. The beam carried a succession of thin flanges, and between them the proper number of threads for that width of warp and of the desired pattern were wound The threads passed singly through the eyes of a lease heck, next in half beers between runners, then they were condensed by a "wraithe" to slightly less than the width of a section; and finally, by imparting a slight to and fro motion to the "wraithe," the threads were laid evenly from flange to flange.

In order to ensure compact winding a weighted presser roller was suspended from a shaft by a pair of loosely fitting arms, and the roller rested upon the yarn until a section was full, at which time it was slided, together with the heck and "wraithe," to the next section, where the process of filling was again repeated. Automatic measuring and marking motions were also attached to this machine, but whether or no it ever passed beyond the experimental stage is difficult to determine—certainly the leading idea has since been worked out in many ways.

In or about the year 1840 Mr. Chadwick, a Manchester manufacturer, employed sectional blocks, each of which had a square axial hole, and when filled with yarn they were threaded upon a square shaft and pressed into position by means of flanges, but not with sufficient force to produce a solid mass. After which both beam and blocks were placed in the loom.

The chief objections to such a system are: first, the large number of section blocks required to supply the needs of a weaving mill, and, secondly, the impossibility of obtaining a perfect fit between a block and a beam—this latter difficulty became manifest when it was necessary to turn a beam back, for some sections would move further than others, hence tight and slack yarn was a frequent source of trouble

It was not until J. and G Ashworth, in 1875, introduced their invention, that close attention was bestowed upon sectional warping, and even now the system can scarcely be said to occupy a secure position in the cotton industry, for notwithstanding great subsequent improvements in the machinery, sectional warping has, relatively to Yorkshire dressing, distinctly receded, and to all appearances there is little present likelihood of the system regaining its lost position When the Ashworth warper was introduced many manufacturers considered the problem as solved; but a closer acquaintance with the machine revealed such serious defects that it has been to a large extent set aside in favor of more recent inventions. Still, as this machine continues to be used, a short description will not be out of place, especially as it will enable us the better to appraise later changes.

Hutchison, Nisbet & Auld, wholesale woolens, Toronto, have recently placed on sale the stock of the Cobourg woolen mills, which they purchased

PROPRIETY IN DESIGN.

The following interesting observations on the designing of linen fabrics from the *Irish Textile Journal* will be found to express ideas which are applicable to a wide range of subjects.

The prominence into which the tablecloth has been brought has given designers a rare opportunity. Longings that have been fettered for years by floral patterns have been let loose on emblematic and figure subjects. So far as the arts of the past can be trusted, there is ample warranty for this indulgence. There have been few periods in which textile art has been confined to geometrical or line patterns, or in which what may be called botanic designs have been exclusively adopted. It is probable that animal and human figures were the earliest aims in pictorial wearing, and that a religious motive prompted them. It is not possible here to enter into the question as to how far or for how long symbolism influenced textile ornament. Some idea of its effects may be obtained from a curious instance given by Dr. Rock of clearer devotion in woven goods. Small square pieces of embroidered linen, he says, are sometimes found in country houses in some old chest, of which the original use is said to be not now known. But in most cases these were made for children's quilts, and often have the emblems of the evangelists figured at the corners, reminding us of the nursery rhyme once common both in England and abroad—

"Matthew, Mark, Luke and John,
Bless the bed that I lie on."

The quilts also for grown people were ornamented in the same way. At Durham, in 1446, in the dormitory of the priory was a quilt, "*cum iiij evangelistis in corneriis.*"

Equally impossible is it to attempt description of the lengths to which pictorial weaving, even in damasks, has been carried. There have been landscapes and hunting scenes, and animals in sufficient variety to fill a museum, represented in warp and weft; but it must be urged, and will readily be admitted, that modern taste is opposed to such textile exuberance of design. Particularly as regards table linens does it dis pprove of any attempt to convey perspective, or to render any object in high relief. Animals and birds, if strictly conventionalized, are sanctioned; but beyond that, according to the critics, the treatment of a fabric that is intended for use upon a flat surface should not be allowed to go. These views were forcibly expressed in a review of the flax section of the Dublin Industrial Exhibition of 1853, and the passage will have further interest as showing besides to what extremes linen designs of that day were carried.

"There is a class of damask designs which certainly sins against the rules of correct taste, viz.—the representation of landscapes, buildings, architectural ornaments, and copies of designs applied to ceramic works, or found in the remains of antiquity. As an instance, we may refer to the 'Portland Vase Patterns' of Mr. Henning, admirably represented, no doubt, and to be wondered at as a triumph of manufacturing skill in copying so accurately the human figure and the expression of the features; but quite unsuitable when the intention of damask table linen is taken into account. Another the 'Egyptian pattern,' the mechanical execution of which is equally excellent, is open to a similar objection. In the exhibition of 1851 a Dunfermline manufacturer showed a tablecloth containing, as a centre, a correct view of Balmoral Castle, and another copied a shield of precious metal presented to Prince Albert Again, in our own exhibition, Mr. Andrews exhibited a table-napkin with the emblems of Ireland—a wolf-dog, round tower, harp, etc. The fault of all these consists in applying to what should be considered a flat surface objects totally out of keeping with it. We do not place our bouquets on sphinxes and ibises, nor range our dishes against the perpendicular walls of Irish round towers and Balmoral Castles, nor set our plates on the top of the Portland vase, nor our wine glasses on antique shields. Wreaths of flowers, as in the time of the Romans, may be strewed upon the festive board; foliage may add freshness to it, or geometrical patterns may give the idea of a tesselated or mosaic surface; but further than this, at least with correct taste, we should not go. These errors are by no means confined to our own manufacturers. Those

of Germany, France, Belgium, who exhibited in London, in 1851, showed the same."

We are quite prepared to admit that the damask manufacturer is not in business to theorize upon applied art and its limitations. We are equally ready to acknowledge that the manufacturer who endeavored to uphold principle at the expense of trade, and who refused to supply goods to designs that seemed to him faulty in principle, might be very properly described by the term which Mr. Bumble applied to the law. He might, indeed, be fairly called "a hass," and would fully deserve the financial fate that would probably befall him. But it is an accepted fact that industrial art moves in line, and that design in differing products has striking similarities. Not only because the literally "figured" damasks of to-day are in opposition to orthodoxy in textile art, but because they appear to have no relation to other goods of present manufacture, we are of opinion that their popularity will not last any length of time. And the only purpose of these remarks is to offer some reasons why caution should be exercised in falling in too readily or adopting too largely this "end-of-the-century style," which appears to have, so far as table napery is concerned, too many of the characteristics of some of the centuries that are gone.

Foreign Textile Centres

MANCHESTER.—In the cotton trade a number of complaints are heard from men interested in the Levant trade, due to the commercial paralysis resulting from the outbreak of hostilities in the East. Some consignments owned by Greeks run the risk of confiscation on arriving at Constantinople, and efforts are being made to prevent the discharge of goods on arrival in Turkey where such danger exists. For the rest, the war has not had much effect on general business. There has been a considerable demand for certain classes of fancy goods, but trade generally is slack. The woolen departments have been moderately active. Flannel manufacturers still experience the effects of flannelette competition, and some branches of the trade have been seriously injured by the cotton imitation. There are also certain sections of the cotton trade which have been hurt by flannelettes. Cotton shirts for men's wear are now in large demand. *Negliges* of this material are being produced in very attractive styles, the addition of a collar and tie being sufficient to make neck wear look very attractive. There has not been much doing in silks during the last month. Manufacturers are pushing business, and are endeavoring to effect as large sales as possible, in anticipation of a threatened influx of Japanese goods to a larger extent than usual. There is not much doing with Spain and her colonies just now. The collapse of the Cuban trade has crippled the Barcelona mills, and hundreds of looms formerly running on linens for the Havana market are now engaged in the production of cotton goods for the Spanish home trade. Calico printers are moderately well engaged. They have not done much for the East of late, but are shipping fair quantities of goods to South America. Some heavy shipments have been made to the West Coast of Africa, which has become an important market for some of the Liverpool and Manchester shippers. There have also been large consignments to Turkey of late, although the general trade with the Levant is falling off. The wholesale clothing houses are well engaged, and have done a very large business this season. They are cutting up very large quantities of low and medium cloths, and have had important South African orders recently. Even Johannesburg is buying, although up to a few weeks ago that market seemed to be in the most doleful dumps. Many of the jackets worn by the Boers are manufactured in this country, and special clothing, suitable for use where cartridge belts are employed, leave this country by the thousand for South Africa. Ready-made clothing manufacturers are, of course, responsible for the change, for reasons generally understood. Manchester has not yet lost its hold of the business, for the makers up here are numerous and important—much more so than many would believe. In equipment and organization it may, in fact, be said that the wholesale clothing houses of Manchester have very little to learn. They cater for special trades, and do their work very well. There are still opportunities left for the bright linen salesman, notwithstanding what the croakers say. Embroidered goods cannot be offered by British houses at prices competing with continental makes, but there have been many improvements of late years, and a large increase in the variety of goods offered. The Dunfermline section of the linen trade has kept to the higher-class end of the business more closely than Belfast, and many believe that the Fifeshire branch of the industry is in a stronger position than it otherwise would be because of that fact. Ulster has been cheapening and cheapening for so long that a large proportion of the looms in the North of Ireland are now turning out goods composed of cotton warps, while in the cotton trade itself the tendency is towards improvement in quality of cloth as well as in design, an inevitable consequence, after the loss of the trade in coarse cotton goods with the United States and the Continent, not to speak of the destruction of the low count yarn trade with the East.

BRADFORD.—Nothing has occurred in the wool trade here to check the drooping tendency of prices, or in any way to enliven the very quiet state of business which had obtained for some weeks previously, though further transactions in wool are reported for American shipment in good greasy colonial wools, and also in some special classes of home-grown hosiery wools. It must be regarded as a most astonishing fact that these continued large withdrawals of wool on American account from stocks here have inspired so little confidence, and have in scarcely any particular class of wool effected any rise in prices. The demand on behalf of local consumers for fine soft wools continues quiet. The price of cross-bred wools and tops is now quotably less than at the close of the last series of wool sales in London, but consumers are still holding off buying, as very large amounts of these wools are worked up into yarns for export to the continent, and that particular branch of the trade is just now in a very unsatisfactory state. With the exception of the special business for the States alluded to above, there has been very little movement in the English wool markets, and prices remain unaltered, with a quiet demand. At the recent low wool sales in London the tone was weak, and the competition far from animated. In mohair there are few transactions reported in the raw material, and all medium and inferior classes are barely firm; but the demand for bright yarns for introduction into fancy dress goods keeps up the inquiry for safer sorts. The probability of the passage of the new American tariff bill through the Senate being delayed until June, has caused some further orders for goods to be placed for that market, and the new particulars for this business have kept some spinners busy who were beginning to be badly in want of work. In manufactured goods the rush for America still continues, and large quantities of worsted coatings, linings and dress goods continue. As every available minute is of value, the houses engaged in the American trade kept their staffs at work without break through the Easter holidays, but no doubt there will be very ample opportunities for vacations after the bill comes into force. The leading manufacturers of dress goods here, who have not allowed the American spurt to interfere with their regular home trade, are, as a rule, fully employed on the better grades of goods, and are delivering for present use good quantities of striped effects in mohair, of Jacquard crepons, and also in checked and plain costume cloths. For the autumn trade costume cloths of the clothy and tweed order, in plain and mixed effects, are selling well, and a certain proportion of fancy fabrics, into which threads of tinsel have been introduced, are also being taken up. Recently there has been a great increase in the number of buyers visiting Bradford both from London and the other great provincial distributing centres. There have also been a few Australians about, who are finding that the American demand has cleared out a lot of stocks which would otherwise have been obtainable at very handy prices In the flannel trade great attention is being paid to the preparation of season's samples, now that the buying preparations for the season are practically complete, and prospects are considered good The great advantages of wearing garments wholly composed of wool for cycling and other outdoor recreations, is expected to create an

increased business in plain and fancy flannels for blouse purposes. In the heavy woolen districts there have been some orders placed in army cloths for abroad, and there is a fair business moving in low serges and in light woolens for dress purposes, the most successful being imitations of the higher-priced costume cloths, which have been so largely worn for jackets and skirts The trade is opening out more in fancy sealskins, but the makers of blankets and rugs are quieter, and complain about the extreme cutting of prices

NOTTINGHAM.—The activity in American business is reflected in the trade returns for last month In that month the value of the exports of cotton lace and patent net was £231,801, against £186,884 for March, 1896, and £201,600 for March, 1895 Although details of the destination of the goods represented by these values are not given, there is no doubt that the better part of the increase is in increased shipments to America. Simultaneously with this there has been a marked improvement in buying for the home trade. Fashion is eminently favorable, and a large special trade is anticipated from the Diamond Jubilee celebrations. From the continent, too, some considerable orders have come, and altogether the tone in the warehouses is healthy. Fancy cotton millinery laces are among the best off After a period of something approaching depression, this department has improved week by week for a couple of months past, and is now very busy. Assortments of Valenciennes, from narrow edgings to wide laces and insertions, are selling freely for the home, continental and American markets. Ivory is the tint most in request. Butter and white, however, are being eagerly taken up for special buyers Grass lawn shades and grass lawn with white effects are fashionable. Fair quantities of malines, bruges and other fine imitation laces are being bought. The same will apply to Point de Paris laces, insertions and nets. But stocks are exceedingly large, and the fierce competition among manufacturers and dealers prevents anything like fancy prices being obtained This competition is especially strong in Maltese, torchon and guipure goods. The production of Oriental laces at home and abroad is very much above the demand, and the position is unsatisfactory all round. Silk laces show an improved tone, and manufacturers of Chantillies speak cheerfully of the present demand and the immediate prospects. Honiton braids and beadings in linen and cotton keep up well for export and trimming purposes. American trimmings are better, but not so good as they might be. Swiss embroideries and everlasting trimmings, on the other hand, are only in limited request Lace curtains and window blinds are selling in quantities for the home trade. Furniture laces and toilets have also revived Corded goods in laces, insertions, curtains and toilets are selling in larger quantities. In caps, aprons, collarettes and gopherings, also, there is a big business on hand, and large consignments of plain and chenille falls and veilings are going off. The plain net department is busier than ever. It is being taxed much beyond its capacity of production, and one hears of inconvenience to home buyers, who cannot obtain delivery by reason of the extraordinary demands for fine nets for the continent for embroidery purposes. There is something like a corner just now in this commodity.

LEICESTER.—The amount of business doing in the wool market is unsatisfactory, and prices are in favor of buyers where sales are forced Users are quite content to take small lots to keep their stocks assorted to meet actual consumptive requirements, and speculation is avoided Choice bright-haired fleeces are kept back by holders, and the best qualities of Shropshire wools are steady, but all secondary and inferior grades are exceedingly dull Skin wools are steady, and the supplies are ample Good colonial wools are in fair request at late rates The yarn market is quiet, and production is being reduced to prevent the accumulation of stocks. The delivery of hosiery fabrics has greatly reduced stocks, but buyers are acting with extreme caution, and the business is very partial

SOUTH OF SCOTLAND.—The retail drapery trade in Glasgow is not improving very quickly. Warehousemen blame the cold, wet weather So far there has not been much sunshine, and consequently there has been little inducement to customers to invest in summer wear Very seldom have merchants been so well prepared for a busy season as they are now, and it will be a keen disappointment if the year's turnover is a poor one. The wages of the Kirkcaldy floorcloth and linoleum printers who are engaged on piecework will be advanced 5 per cent. on May 1. A new linen factory is about to be built at Kirkcaldy. It is expected to give employment to 500 or 600 hands The building is to be fitted with the most improved machinery. Two of the floorcloth factories are undergoing considerable extension. The textile industries at Kirkcaldy are exceedingly brisk, and large quantities of goods are being despatched weekly. The rush to get linen goods sent to America from Dunfermline is over. Manufacturers did not know when the new American duties become law, but they showed great anxiety to have their goods in the States prior to May 1. It is anticipated that business will be quiet for a time. The home demand continues fairly good. The Forfar Factory Workers' Union is in a flourishing condition, and the state of the finances is extremely satisfactory. The income greatly exceeded the expenditure, and the funds at the credit of the association amount to £3,615 13s. 5d.

BELFAST.—The past month has not been productive of much change in the general state of the market, but recently a rather better inquiry has sprung up in many departments, and buyers have operated on a somewhat more generous scale. Prices all over continue steady at recent figures, with an advancing tendency in some instances. Only odd parcels of flax have been sold at fairs since last review, and the season is now at an end. Sowing for the new crop has now commenced, but it is very generally expected that the acreage will be at least a third less than last year. *Ex* store a fair business is passing at unchanged prices. The yarn market has been decidedly quiet throughout the month, but, with the exception of fine counts of tows, prices have been steady. Whilst buying all along has been conducted with great caution, still the turnover has been fairly good, and as manufacturers are still well engaged this is likely to continue to be the case. Coarse tow yarns, say below 25's, are scarce, and fine lines above 100's are in good request, but medium counts of both are sluggish and going into stock. In the manufacturing branch of the market any change at all has been by way of improvement, and though the market is by no means brisk, nevertheless a very fair trade is passing in most branches of the manufacture at full rates lately current. Power-loom bleaching cloth is being bought steadily and in rather larger quantity, and very trifling concessions on full rates would be productive of a substantial increase in the turnover. Boiled-yarn goods have met with a ready sale, and there has been more inquiry for green-yarn makes since the turn of the month. Cloth for dyeing and hollands has been rather quiet, at unchanged prices. Narrow roughs have been in active request where quick delivery could be given, and stocks of these are entirely cleared out. Prices firm. Damasks have gone steadily into consumption, and though current orders are about sufficient to absorb the output, forward contracts would be acceptable. Unions of all kinds have met with a steady and gradually growing demand, and prices, though quotably unchanged on the month, have a hardening tendency owing to the stiffening of cotton yarn rates. The improved demand for medium and fine setts of linen handkerchiefs has been maintained, but the coarse end up to the present has shown little improvement. Brown hand-loom goods in the various makes have been bought fairly well, though the demand at the moment is quieter. No change in stocks, as the output from the looms is now smaller; prices unchanged.

LYONS.—The situation in the Lyons silk industry continues the same, but the demand for fabrics has not been sufficiently large of late to cause satisfaction and some complaints are heard by manufacturers about poor business. The reassortment demand for the Paris market does not show much life, but retailers there are commencing to increase their sales, and an increase in the demand from that quarter for staples and novelties may be looked for soon. A beginning has already been made and some business has been done in lines which had been neglected up to recently. For the London market an improvement in demand is also looked for soon. What the market lacks is a little life in the order business for fall. Some

orders have been placed, but for small lots, indicating that buyers have not yet gained confidence in the future. Lines which have been in the lead before continue in demand, and changeable and plain taffetas and plaid and checked taffetas are selling. Muslin, crepe and tulle are the objects of everyday demand, which proves that these goods still retain their position as favorites Satin in black and colors finds buyers in relatively large lots. Satin duchesse is selling. Plain and checked surahs are in demand. Pongees are in relatively good request. Silk and wool mixtures in bengaline weaves find ready takers. Gauzes are selling, but the demand for fancy gauzes could be better. Pekin stripes are rather slow. Armures are liked and sell fairly, while the demand for medium priced damasks in black and colors is good. For the English market rich fancies in all silk and in silk and wool are selling. The ribbon market is active with a good demand for satin ribbons in light shades. Velvet ribbons are in demand. Plain goods in the cheaper cotton mixtures find buyers. The velvet market is not active, with a demand for plain velvets in small lots.

CREFELD.—The demand for silk fabrics is not very active, and while retailers are calling for reassortments, the business done in these fluctuates with the weather and the close of the season is approaching without showing that revival in demand which often in former years distinguished the second half of the season. Wholesale houses are ordering little, the demand for home consumption being limited to staple goods and to the old favorites, like changeable and plain taffetas, louisines, plaids and checks. The manufacturing situation does not show any further improvement, although it remains much better than it was at the close of last year. The only articles which seem to be in anything like good movement are linings for the cloak trade, in which a satisfactory business is still being done. Business for export is slow, little being done for the United States, while the demand for England leaves much room for improvement. Fancy changeable effects on taffeta grounds are liked and are being ordered, but on the whole buyers have so far shown very little inclination to order for fall. Damasses have been ordered for fall. Fall order business in dress and trimming silks has developed only slowly and the looms are commencing to feel something like a scarcity of work in this branch, which, however, should not last long, as orders for next season cannot be delayed much. But this causes a stop in the progressive movement which had occurred in the manufacturing situation. On the other hand, the situation in the tie-silk branch is satisfactory and orders already secured guarantee a steady production for some time to come. Fall order business in cloaking silks has opened and a fair volume of transactions is reported, but in small lots, buyers being more anxious at present to secure a variety of the supply than a large supply of any one article. Linings take a share in this order business. The lead so far in cloaking goods for fall seems to belong to matelasses, which have been fairly well ordered and which are likely to become strong competitors of plush. Velvet and plush are quiet and featureless.

MILAN.—Purchases of raw silk have decreased, but have not entirely stopped. Manufacturers purchase little and only for absolute needs, as they have not yet become accustomed to the new condition of affairs which, taking the control of the market away from the buyer, have placed it in the hands of the seller. Prices are firm. Italian raw No. 1, 14-16, 12, 14 is quoted 40 to 40½ lire.

ZURICH.—The high figures demanded by holders of raw silk have not yet found acceptance by manufacturers, and as sellers are unwilling to recede from present quotations business is practically at a standstill. The Milan market is firm and advices from Asia report no change in the general tone of firmness. The figures of the conditioning works are a good indication of the greater activity in the consumption of raw silk, and the totals for March, 1897, show increases over those for the same month of 1896. In four of the leading silk-conditioning works the totals registered show the following increases over March of last year: Zurich, 39,987 kilos; Basle, 25,062 kilos; Milan, 171,320 kilos; Lyons, 120,066 kilos.

J. W. Dawson, of the John Dawson Co, Glasgow, Scotland, manufacturers dyestuffs, visited Almonte manufacturers recently.

Textile Design

The following fashionable designs are reproduced from the *Journal of Commerce*, Boston, and should contain some valuable suggestions:—

No. 1, for woolen suitings.—1,920 ends in warp, 16 ends per inch; 8 reed; 2 in a reed; 15 picks per inch; 64 inches in reed, 56 inches wide when finished. Weight, 17½ ounces, 4 healds, straight draft. Woven plain.

Warp:

Ends.		
1 brown,	8 skeins.	
1 blue,	"	
1 brown,	"	
2 blue,	"	} twice.
2 brown,	"	
1 blue,	"	} twice.
1 brown,	"	
1 red twist,	"	

16 ends in pattern.

Weft:

Picks.		
1 blue twist,	5 skeins,	
1 brown,	7 "	
1 blue twist,	5 "	
2 brown,	7 "	} twice.
2 blue twist,	5 "	
1 brown,	7 "	} twice.
1 blue twist,	5 "	
1 red twist,	7 "	

16 picks in pattern.

No. 2 for woolen suiting.—1,920 ends in warp; 16 ends per inch; 8s reed; 2 in a reed; 15 picks per inch; 64 inches in reed, 56 inches wide when finished. Weight, 17½ ounces; 4 healds, straight draft. Woven plain.

Warp:

Ends.		
1 white,	7 skeins.	
1 mix,	"	
1 white,	"	
2 mix,	"	} twice.
2 white,	"	
1 mix,	"	} twice.
1 white,	"	
1 twist,	"	

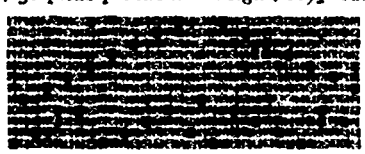
16 ends in pattern.

Weft:

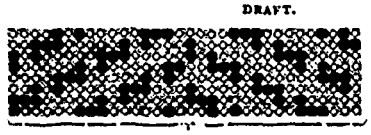
Picks.		
1 twist,	5 skeins.	
1 mix,	7 "	
1 twist,	5 "	
2 mix,	7 "	} twice.
2 twist,	5 "	
1 mix,	7 "	} twice.
1 twist,	5 "	
1 yel. t'st,	7 "	

16 picks in pattern.

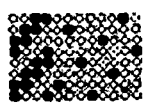
No. 3, for worsted trouserings.—7,170 ends in warp; 111 ends per inch; 14s reed; 8 in a reed; 64 inches in reed, 56 inches wide when finished; 50 picks per inch. Weight, 16½ ounces



DRAFT.



3 Times. DESIGN. 3 Times.



PEGGING PLAN.

Warp

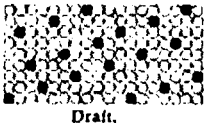
Ends.		
2	black,	2-32s
4	white,	"
2	black,	"
2	slate,	"
4	white,	" } twice
4	slate,	" }
4	white,	"
2	red,	"
2	slate,	"
4	white,	"
4	slate,	"
4	white,	"
2	slate,	"

48 ends in pattern.

Weft 2-30s cotton.

No. 4, for worsted trouserings.—8,000 ends in warp, 126 ends per inch, 15¾ reed; 8 in a reed, 64 inches in reed; 56 inches wide when finished. Weight, 24 ounces.


Design


Draft.


Pegging Plan.

Warp Face Pattern:

1 twist,	2-40s.	12 times.	
1 blue,	"		
1 blue,	"	3 times	3 times.
1 twist,	"		
1 twist,	"	4 times.	
1 blue,	"		
1 blue,	"	3 times.	
1 twist,	"		
1 twist,	"	12 times.	
1 blue,	"		
1 blue,	"	12 times.	
1 twist,	"		
1 twist,	"	3 times.	3 times.
1 blue,	"		
1 blue,	"	4 times.	
1 twist,	"		
1 twist,	"	3 times.	
1 blue,	"		
1 blue,	"	12 times.	
1 twist,	"		

192 ends in face pattern.

Back pattern:

4 ends blue,		16 times.
2 ends twist,		

288 ends in pattern

Weft

60 picks face 2-40s worsted
30 picks back, 12s skeins, woolen.

WEIGHTING SILKS.

The meeting of the Macclesfield Chamber of Commerce to consider the question of the adulteration and weighting of foreign silks is very instructive to English silk dyers, says the *Dyer and Calico Printer*. Manufactured silk goods, according to the president, are the largest item in the British imports of manufactured goods, and in fifty years the bill has grown from £5,000,000 to £17,000,000, while in the same period the exports have fallen from over £2,000,000 to under £1,000,000. He passed round some samples of Crefeld colored silks weighted 138 per cent., and suggested that the remedy for such a state of things was that the law should oblige the seller to state the amount of adulteration in the silk he was offering. Silk is weighted in the boiled-off state in this country, but abroad the filling is added to the ungummed stuff; the 138 per cent, therefore, meant that 16 ounces of gum silk had been weighted to 38 ounces. A member asserted that the Crefeld dyers had taken a stand against this excessive weighting. The effect of weighting the silk to such an extent had been that after about twelve months' sweating on the shelves of the buyers the fabric had been found to become absolutely rotten. The dyers, therefore, would give no guarantee and threw the onus of risk on the buyers.

Mr. Dunkerley, a well-known silk manufacturer, stated that there was not a broad silk department in London, wholesale or retail, where there was not 95 per cent. of all the pieces in the place heavily adulterated silks. Mr. Hall said he presented a sample of pure silk to a London buyer, who rejected it as too thin. He, however, remonstrated with him, and said they were pure silks and not heavily weighted dye silks, and that they would wear; but he retorted, "That is like all you Macclesfield manufacturers, you won't give us what we ask for. The foreigner gives us heavily weighted stuffs." Those same patterns, however, a month ago, with the same colorings, everything same, were ordered by that same house. It only showed they were coming now to that state of trade when the heavily weighted silk had been overdone, and that there was a conscientious desire on the part of buyers to buy more pure silks. He did not say they would go into exactly pure silks, but they would not go into the heavily weighted goods as they had done in the past. They were handicapped to a very great extent by the foreigner in regard to these heavily weighted silks, because if they went into them the manufacturers could not get their silk returned from the continent in time to compete with the continental firms, and until the dyers could bestir themselves and give them what the continental firms gave them they were handicapped to that extent and were not on a fair basis.

Some of the members seemed to hint that the best remedy was for them to do likewise, but it was asserted the dyer would have to pay £3 or £4 more a ton for the weighting material than his foreign rival, and the cost of labor was much lower abroad. It was seriously alleged that every Macclesfield manufacturer sent his goods to Germany to be dyed and weighted, and if the statement was exaggerated it was not altogether contradicted. Eventually the proposition to request the president of the board of trade to appoint a commission on the subject was carried unanimously.

WOOLEN DRESS GOODS.

The first finish and preparation for dyeing and printing of piece dyed all-wool dress goods, writes Moritz Kenner in *Textile Zeitung*, is one of those manufacturing processes which require a full measure of care and attention in the manipulation. It is different and multiform according to the nature of the material to be handled, and depends upon the appearance and finish which the article in question is to present. The final finish following the dyeing and printing of the material, is not, therefore, the only means of imparting to the goods the desired facing and finished appearance; their foundation must rather be laid already in the preparation previous to dyeing or printing in the so-called preparatory finish.

As regards the kind of preparation to be chosen, two classes of woolen goods are principally to be distinguished from each other, one comprising those articles which must be singed, and the other such goods as must not be singed. Singeing is required for all kinds of goods which, when finished, are to present a clean, smooth facing free from all fuz of wool or fibres; for, in this operation all the many small ends, hairs, fibres and woolen burrs adhering to the stuff are burned off, which later on might interfere with the smoothness of the face. This singeing must be applied with more or less intensity according to the character of the material, either by operating with one or more flames, or by passing the goods once or several times over the singeing machine used for the purpose. If the material is of light weight, not particularly close woven, or made of high count yarns of the better quality, one singeing will in most cases answer; for it must not be overlooked that by too strong singeing the material becomes poorly, and its strength is impaired. A standard measure can only be found in performing the operation itself and must be left to the individual sound judgment. It may be remarked, however, that all goods which are made of coarse, thick yarns, or of yarns from ordinary wools, require a proportionately sharp singeing, either upon the singeing plates or upon singeing machines with gas jets. Goods which are to appear particularly clear are, after washing and drying, singed once again.

The other principal group is composed of such tissues as must not be singed. These are the fulling goods and those articles which, although of worsted yarns respectively of hard long-stapled wool, are, when finished, to present a cloth-like face. In these cases the adhering nap must be preserved, for it is this that in fulling produces the fine felted surface, or in the case of fine twills which are neither singed nor fulled, gives the matted cloth face. For the latter class the material is in finishing only sheared; the wool fibres being left to stand between the ribs of the twill, thus form a fine glossy cloth nap. If they were not preserved the face would everywhere appear equally glossy; the preparatory finish, therefore, is limited to crabbing, washing and drying, sometimes also to steaming.

Another important treatment of all-wool tissues is the next following crabbing of the material. This is done by a bath of soda lye combined with rinsing with water, while the piece is automatically kept broad. The object of crabbing is to fix the tissues at a certain permanent width, to prevent crinkling and to increase the gloss of the wool. According to the temperature of this lye and water bath, and to the duration of the operation, the goods turn out fuller, narrower or wider; what has then been fixed is only with difficulty done away with. Singed goods, as well as the others, must naturally be washed before drying, for which purpose they pass through washing tubs with guide rollers and squeezers, in which they are by means of soap and abundant water cleansed from all dressings and other impurities. Common dirt and grease spots caused in weaving and handling the goods should already previously in cleansing and examining the pieces have been removed by means of benzin or similar solvents of fats. This operation is followed by thorough rinsing, whizzing upon the hydro-extractor and drying. For this purpose, in most cases, hot-air, step-drying machines are employed, which at the same time automatically tenter and fix the material at a given, at will determinable, width. Cylinder dryers are only used for such qualities and materials as can stand stretching longitudinally and across, that is principally for heavy goods and those whose final width can in the subsequent finishing be fixed upon the tenter-frame or tenter-frame drying machine.

Steaming in preparatory finishing, which is sometimes reverted to, especially in the case of heavy fabrics, is only of real value when it is applied instead of crabbing. In that case the goods must be fixed correspondingly wider so that they cannot shrink again, as steaming after crabbing and washing is of little consequence.

For fulling either the crank machine or the cylinder fulling mill is used; the former principally for short cuts or any light goods which do not stand the strain upon the cylinder machine, which, however, presents the advantage of running much more evenly In fulling repeated additions of Marseilles soap are made Measuring and controlling of the width plays a principal part in all operations, particularly in crabbing and fulling. Too strongly fulled material turns out too narrow and too heavy, insufficiently fulled goods too wide and too light in weight. For dyeing very light and delicate shades sometimes bleaching is required, preferably with hydrogen peroxide, which is the simplest and quickest process.

JAS. A. CANTLIE & CO.

A very great deal of sympathy has been expressed for the woolen manufacturers who have suffered by this failure, and for the head of the firm of Jas A. Cantlie & Co., Montreal, which has assigned on demand of the Bank of Montreal, with liabilities of $220,000. For the past thirty years the firm has been prominent among the leading manufacturers agents of Montreal, and has always borne the best reputation. Some time ago it was announced that R. Simpson, confidential clerk of the house, was a defaulter in the sum of $70,000. The investigation of the business following his departure showed that the business had been running behind for years, and that the firm was insolvent. The firm consists of James A. Cantlie, who of late years has been the sole owner. Mr. Cantlie has long been prominent in business circles, particularly in the Board of Trade In 1890 and 1891 he served on the council of that body, and in 1892 was elected second vice-president. The year following and also in 1894, he was first vice-president, and during 1895 was president of the Board. The meeting of creditors had not been held when THE CANADIAN JOURNAL OF FABRICS went to press

LIST OF CREDITORS.

Wm. Thoburn	$35,996 85
Almonte Knitting Co	20 190 65
R. Gemmell & Son	15,35 00
Adam Lomas & Son	34,282 05
Peter McDougall	8,900 00
Alois Knops	1,719 14
J. Cupper Sohn	1,600 05
Heinrick Ax	4,560 29
Mrs. Camp	1,000 00
James G. Field	1,633 28
Galletti Whyte	2,322 38
Dufton & Sons	1,156 03
A L. Grindrod & Sons	1,879 00
Logan Bros	43 95
Dontigny & Hughton	13,761 76
E. A. Small & Co.	4,550 67
Truro Knitting Mill Company	2,433 31
Alex. Stewart	4,081 15
W. C. Pittfield & Co	2,232 44
Bank of Montreal	4,576 18
Geo. D. Ross & Co	5,385 68
G. Bradshaw & Co	6 23
Montreal Cotton Co	63 23
CANADIAN JOURNAL OF FABRICS	5 00
Monetary Times	25 00
Victoria Hosiery Co.	51 80
McMaster & Co.	239 90
Jenner Roxburgh Co.	2 70
Wm. J. Parks	16 93
Standard Hosiery Mills Co.	34 38
Mosgiel Woolen Factory	18 05
St. Paul's Church	679 42
R. McD. Stephen (Privileged)	60 15
T F. Sullivan "	56 66
R. Mellis "	6 00
Rent to 1st May "	275 00
Indirect—	
Bank of Montreal, about	50,000 00

THE MANUFACTURERS' ASSOCIATION.

At the annual meeting of the Manufacturers' Association, held in Toronto, May 5th, the following resolutions were passed

Whereas, it is a feature of the new tariff recently introduced in the House of Commons to give to certain countries an ultimate reduction of twenty-five per cent from schedule rates;

And, whereas, under the interpretation of the tariff the reduction aforesaid has been immediately applied to Great Britain,

And, whereas, there exists a doubt as to whether other nations under treaty with Great Britain are entitled to the same privileges;

Resolved—(1) That in the opinion of this association the Government should take power from Parliament now in session to cancel or alter schedule "D" of the tariff, and the resolutions relating thereto, in case it should hereafter transpire that Great Britain cannot accept from Canada the preferential terms offered unless the same concessions are granted to Belgium, Germany and other foreign countries.

Resolved—(2) That while in the opinion of this association the reciprocal tariff should not be extended to any country unless that country give us a preference in their market equivalent to the discrimination allowed by us in its favor, yet, if such reciprocal tariff is applied, the minimum rate thereunder should be high enough to protect Canadian industries from the competition of all countries having low-priced labor, cheaper raw materials, fuel and capital, and whose long-established industries give them great advantage over the later established industries in Canada.

Whereas, it appears by the new tariff that the protection afforded certain industries has been entirely removed, or reduced to such an extent as to seriously cripple their operations, and which will ultimately force them out of business ; and

Whereas, this association has repeatedly placed itself on record regarding the importance, from a national standpoint, of maintaining in our midst those industries which may legitimately exist under fair protection against foreign products, thus benefiting our laboring classes and encouraging the investment and operation of capital in Canada ; and

Whereas, it has been frequently affirmatively demonstrated at general elections that the desire of the people is to maintain a tariff which will make our interests paramount to those of foreigners, and at no general election has the abandonment of that policy been the issue ; and

Whereas, no less than $200,000,000 of additional capital has been invested in manufacturing enterprises in Canada since the adoption of a protective policy ;

Resolved, that while recognizing the difficulties necessarily encountered by the Government in formulating a new tariff, this association is yet of the opinion that it is in the interests of the country that the principle of tariff protection should be observed in order to retain and maintain within our borders those industries which would otherwise be seriously affected, if not completely annihilated, by an abandonment of that policy.

Whereas, it has been deemed by the Government advisable to embody in the new tariff a clause by which the Governor-in-council is empowered to place any article on the free list, or reduce the duty thereon, whenever, in his opinion, there exists what is termed by the Act a "trust, combination or association" between manufacturers of any particular line of goods ;

Resolved—(1) That in the opinion of this association such legislation is class legislation of an unfair character, in that it is aimed at manufacturers only, against which this association enters its protest, while other associations with similar objects are untouched

(2) That in the opinion of this association such legislation ought not to be embodied in the tariff, because the decisions arrived at under it might be the occasion of great injury to those who had no connection whatever with any association of the character described

(3) That such legislation is a violation of a fundamental principle of the constitution in taking away from unprejudiced judicial tribunals the interpretation and enforcement of the law, and in conferring that power on a political tribunal, namely, the executive of the Government.

(4) That this association urge the Government to accordingly amend this clause of the tariff.

Another resolution was passed, and referred to the executive for adjustment, requesting the Government not to increase the old tariff duty on soft coal screenings.

The election of officers resulted as follows President, D. W. Karn, first vice-president, J. F. Ellis ; second vice-president, James Kendry, treasurer Geo. Booth ; secretary, J. J. Cassidey. Chairmen of Committees—Executive committee, R. W. Elliott ; tariff committee, W K McNaught representatives to Toronto Industrial Exhibition Association, George Booth, R W. Elliot, W. K. McNaught, A. E Kemp, J J Cassidey.

TESTING FIBRES AND FABRICS.

It frequently happens that a manufacturer of textiles or one of his subordinates finds it necessary to know the exact materials in a certain sample of yarn or cloth It may be that it is desired to make a cloth like a sample, it may be that it is required to learn what are the different fibres or yarns in a sample ; it may be that a test is desired in order to learn whether a sample is made of the best of stock, or whether inferior goods are being passed off for the genuine articles It is also necessary in some of the operations of manufacture to know exactly what a stock is as to its material, before a process can be entered into, for the process, which might be all right on one material, might absolutely destroy a material differing in nature and qualities We wish to state in a general way some of these various tests that are often found necessary, which will answer all the general purposes of manufacture.

One broad distinction that is sometimes required is that between animal and vegetable fibres. To distinguish between these qualities of stock we boil them in caustic potash lye. The animal fibre, whether silk or wool, will be dissolved, while the vegetable, cotton or linen will remain. If the whole weight is taken before boiling and the weight of the residue taken after boiling and drying, the difference will show the exact proportion of animal fibre that was present in the sample. The difference and proportionate quantities of cotton and wool present in a mixture of the two may be determined by putting the sample in a concentrated solution of sodium sulphide. This solution will eat out the wool and it may be washed away, when a comparison of weights as before will show the exact proportions of each fibre present. These fibres can be tested with greater ease and accuracy if they have not been created with any dyestuffs. This, however, is not so usual in ordinary practice. If the sample is undyed, the sample may be bathed in carbazotic or picric acid. This is a coloring material that does not adhere to a vegetable fibre, and hence if cotton or linen is present it will remain its natural color and the silk or wool will be changed to a yellow, more or less pronounced Even where the samples are colored there will be a difference in the shades of vegetable and animal fibres after this test, which the microscope will reveal if the naked eye will not.

Besides these methods of testing there is the microscope, which will show beyond a doubt the presence of any foreign materials in a sample The threads should be taken out of the fabric under water, and subjected to the lens of a microscope magnifying two or three hundred diameters. If woolen fibres are present they will be cylindrical and covered with scales ; if cotton are present, they will have a ribbon-like appearance, being very thin on the edges and wider on the flat surface ; if linen is in the fabric the fibres will be round, but they will have, here and there, throughout their length, full or swollen places. Silk fibres are straight, plain and cylindrical, with none of the peculiarities of the linen or wool. There are various ways in which the material may be treated so as to cause the differences to be more marked, but in any case with the aid of the microscope an unerring judgment may be formed as to the exact composition and quality of the fibre present.

Suppose now it is desired to determine between vegetable fibres themselves. We have a fabric made up of linen and cotton, and want to get some idea of the proportions of each. Treat the sample with a strong potash solution, and the linen fibre present will be colored a deep yellow, while the cotton will be only slightly affected. A careful examination of the sample, when this has been done, will give a fairly accurate idea as to the quantities of each fibre that are present. Take another sample and use olive or rape seed oil instead of potash, and result will be that the fabric will be spotted or striped ; this is because the linen and cotton appear dissimilar after they have come in contact with the oil. The linen threads that are present become at once transparent, while the cotton remains opaque. Put a dark colored sheet of paper back of the sample so treated, and the difference will be clearly evident, for the transparence of the linen thread will show the dark-colored background quite clearly, while the cotton will remain white.

If it is desired to get at a more accurate idea of the proportions of cotton and linen or wool present in the sample, the following method will answer very well. Place the sample in a mixture made up of two parts of nitre or saltpetre (KNO_3) and three parts of sulphuric acid, and allow it to remain there for ten minutes. Wash and dry it and put it in an ether solution containing a little alcohol, and the result will be that the linen fibres, if any are present, will remain uninjured, while the cotton will be entirely dissolved. The wool, if present, will also remain with the linen. In this way, if weights are carefully taken, the amount of cotton in the sample can be easily determined. Then in order to get at the proportions of wool and linen in the sample the test for animal and vegetable fibres given above will serve the purpose. These tests are all quite

simple, lying within the range of any practical man, and they are quite sufficient for the ordinary necessities of a manufacturing concern. If consumers, merchants and wholesalers were more careful in the examination of their goods it might have a wholesome effect upon the production of honest and worthy goods. One great evil with the market to-day is the almost absolute necessity which exists for adulterations in order, by the cheapness of the product, to be able to get it into the market at all. Careful tests would raise the standard of goods and add to the comfort and satisfaction of the consumer.—*Ex.*

WOOLEN WEAVERS IN GERMANY.

U. S. Consul Monaghan, of Chemnitz, writes under date of Jan. 23, 1897, as follows:

For a long time manufacturers of woolen cloths have been considering the question of making weavers attend two looms instead of one. Foreign competition has compelled them to do so. To-day and henceforth, in this country, woolen weavers are to run two looms. The principal cause of the change is to be found in England's power to put down Huddersfield woolens in Aix la Chapelle, in spite of freights by land and sea, plus ten per cent. import duties, cheaper than the Aix la Chapelle manufacturers can sell at their own gates. For a long time German manufacturers were unable to find out the factors that made this possible. They claim to have discovered them in England's two looms to each weaver. This reduces the price of production for England so much that competition, not only outside, but at home, is no longer possible on the old basis. The entire United States market, for a long time held by Aix la Chapelle specialties is now in the hands of Huddersfield, Bradford and other English cities. The thing to be done in the face of such facts is to follow England's example and make weavers run two looms. This is now the rule. The laborers find it hard, and it is hard. No one who knows anything about the nerve tension consequent upon running all kinds of textile machines will fail to pity the people compelled to run two looms where formerly they tended only one. Less pay, relatively more work, physical exhaustion, and quicker general debility and despondency will be the results Hundreds are to be turned out of employment who know no other way to win a livelihood. The promises to find employment for them in other branches are too hollow to have any effect, except to raise hopes that will never be realized. All eyes here are turning towards the United States with the hope that the one-weaver-to-two-looms system will win back for Aix la Chapelle the trade of the firms that bought there formerly, but buy now in England. The employees urge that under the new system they will break down and be unfit for work at forty years of age, rather than, as now, forty-five. If in no other way, the eyes will wear out, making good, fine weaving less possible. This danger, the manufacturers say, will be met by putting in better material, thus lightening the labor for eye and hand. How much this will help, if carried out, remains to be seen. That wages will be less, relatively, is a foregone conclusion. Workmen and employers are not yet agreed as to how best to adjust the new rates. The whole problem is engendering, or certainly is in danger of engendering, difficulty between the interested parties. The manufacturers, if they are to hold their own and to win back what they lost or were losing, must do as England has done. The battle is to be fought out. Germany cannot compel outside forces or influences, except as she meets them in the world's markets. In the past those places that were most famous for their hand-made products fought hardest against power machines. Many of them lost all, manufacturers up with the times opening in less discontented districts.

P. Macdonald, retail dry goods, Montreal, was recently arrested, charged with having caused the fire in his store, corner of Beaudry and St. Catherine streets, March 24th last

E. A. Small & Co., wholesale clothing manufacturers, Montreal, who intended to move into their new factory and warerooms later on this month, and had announced a big sale by auction of their manufactured stock of clothing, had a $100,000 fire in their premises, May 9th. They were fully insured.

Among the Mills

Co-operation is one of the guiding principles of industry to-day It applies to newspapers as to everything else. Take a share in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.

The knit goods industry in Almonte, Ont., is apparently flourishing. The Almonte Knitting Co. is fully employed, and D. M. Fraser's mill is running day and night.

Jas H. Wylie, Almonte, Ont., is at present running his flannel mill five days a week.

The Watchorn woolen mill at Merrickville, Ont., has been closed down temporarily.

Roger Tattersall, North Adams, Mass., has taken a position in the print works, Magog, P Q., Canada.

B. Caldwell & Co.'s woolen mill, Lanark, Ont., which was closed for a short time, is now running full time.

Feodor Boas, now in England, has succeeded in definitely transferring the Granite Mills to an English syndicate.

Andrew Telfer, of the Telfer Manufacturing Co. (corsets, etc.), Toronto, died suddenly at his residence, in Toronto, April 28th.

F. W. Goss, umbrella manufacturer, St. Catherine st., Montreal, had $500 worth of goods stolen from his shop on the night of April 21st.

While the water was out of the Welland canal last month Watson's knitting factory, St. Catharines, was run by a threshing machine engine.

Supt. Mathewson, formerly with Moorehouse, Dodds & Co., Glen Tay, Ont., now has charge of Wylie & Shaw's blanket factory, Almonte, Ont.

The speeders and slubbers in the Canadian Colored Cotton Mills Co. mill at Cornwall, Ont., went out on a two weeks' strike last month, but resumed work at the company's terms at the end of that time.

The Rosamond Woolen Co., Almonte, Ont., whose mills were closed down for two weeks while the boilers were being reset, started up full time in all departments on April 29th.

The Jno. McPherson Shoe Co., Ltd., Hamilton, Ont., has been organized and the following officers elected: W. D. Long, president; John Penman, Paris, vice-president; W. S. Duffield, secretary-treasurer; G. H. Bisby, P. M. Bankier, directors.

The Kingsville Woolen Mills Co. has been reorganized as the Brown & Wigle Co of Kingsville, Ltd. Capital $20,000. The directors are: Dr. S. A. King, J. E. Brown, Horace Wigle, Ernest A. Brown, James Hillis, W. A. Smith; and George D. Ross, Montreal.

The Millaloe correspondent of the Eganville, Ont., *Enterprise*, says that John Reid, of Almonte, formerly woolen manufacturer of Osceola, expects to return shortly with the intention to erect a woolen factory and to use one of the water-powers convenient to the station to work the plant.

Wm. J. Matheson & Co., Ltd., 423 and 425 St. Paul st., Montreal, have issued the following circular to the textile trades: The Substantive Colors Company having been dissolved by mutual consent, we shall be glad to supply you direct hereafter with any quantity that you may require, of the colors heretofore controlled by that company, such as Benzo Purpurine, Congo, etc., and we can offer you the lowest prices consistent with standard quality and reliable goods.

The Watson-Foster Company, Ltd., will be incorporated with a total capital stock of $450,000, with headquarters at the City of Montreal; for the purpose of manufacturing and dealing in paper hangings and colors, glue, pulp, paper and other material used in the manufacture of paper hangings The applicants for incorporation are:—Hugh Watson, wall-paper manufacturer; Francis Stuart Foster, wall-paper manufacturer; Sidney Smith Boxer, commercial

traveller. Henry John Gear, gentleman, and Eleanor Shearer, wife of the said Hugh Watson, Montreal.

The Yarmouth, N.S., Duck Co., recently exported three carloads of duck to China

R. Gemmill & Sons, Perth, Ont., woolen manufacturers, have failed for $60,000

T. A. Code and Mrs Code, of Perth, Ont., are making a tour of the Southern States

The Wiarton Woolen Mills Co., Ltd., has been incorporated with a capital of $20,000

W. G. Code, Appleton, Ont., has secured a position in Wylie & Shaw's blanket mill, Almonte, Ont.

G. A. Burrows' carpet factory, Guelph, Ont., was destroyed by fire, April 22nd. Loss, $4,500; insurance, $2,000.

The Forest, Ont., flax mill has changed hands, William Weir having sold the property to S. Fraleigh, of St. Mary's.

The Markham Woolen Mill will be offered for sale by auction, May 27th, by Wm. Dickson, at 27 King street east, Toronto.

At the auction sale of the Cobourg woolen mills on the 27th ult. there were no bids and consequently no sale was effected.

A small strike took place recently in the Axminster department of the Toronto Carpet Manufacturing Co., caused by a reduction in wages

Arch Campbell, proprietor of the carpet factory, Markham, is said by the Uxbridge *Journal* to have accepted a situation in Philadelphia, Pa., U.S.

J. E. Molleur, the well-known straw hat manufacturer, of St. John's, Que., is a candidate for the County of St. John's, in the Quebec Provincial election.

The Aurora, Ont., wool receiving case against George W. Graham has been traversed to the next assizes in consequence of the serious illness of the accused.

Hugh McCulloch has purchased the Hawkesville, Ont., mills from the executors of his late father, and intends continuing the business in both the flouring and woolen mills.

The Hon. G. M. Goff, Richford, Vt., who died recently, was at one time owner of a woolen mill at Magog, Que., and was later employed by H. Shorey & Co., Montreal.

W. J. Hogan, Almonte, Ont., has taken a position in the Paton Mfg. Co.'s woolen mill, Sherbrooke, Que. He will figure on the lacrosse team of that place the coming season.

Michael McKevitt, employed by the Rosamond Woolen Co., Almonte, Ont., was severely burned about the head and chest by a steam cap, at which he was working, blowing off.

Owing to the bursting of the cylinder of the slashing machine in the Cotton Co.'s mill at Kingston, Ont., the mill was closed down until the arrival of another from Providence, R.I.

The Quebec *Gazette* recently contained notice of the change of name of the Merchants' Manufacturing Company, Montreal. In future the concern will be known as the Merchants' Cotton Company

The Harriston, Ont., Flax Manufacturing Co. will be incorporated to grow and manufacture flax, capital, $6,000 The applicants are S. M. Henry, M.D., G. Leighton, J. W. Wilson, J. Garbig, W. Beatty, J. L. Eedy, R. Dowling, Harriston

C. Fecteau & Cie., furriers, Quebec, have assigned on demand of J. Bourdeau & Son, of Montreal. Assets, $4,200., liabilities, $3,800. Among Montreal creditors are L. Gnaedinger, Son & Co., $726., Glover & Brais, $353., Waldron, Drouin & Cie., $298., J. Bourdeau & Son, $352., M. Vineberg & Cie., $187.

Ottawa, Ont., is to have a glove factory

The affairs of the Globe Woolen Mills Co., of Montreal, are being liquidated. The raw stock has been all sold, but nothing as yet has been done with the plant. It is not yet decided how the machinery will be disposed of.

Wm. E. Whitehead, a native of Canada, but for some years traveller in carpets for the Sloanes of New York, has returned to Ontario to take the road for the Toronto Carpet Mfg. Co. His territory will be eastern Ontario and the Eastern Townships.

A correspondent of the Berlin, Ont., *News-Record* says: "Owing to a disagreement between James Livingston, M.P., of Baden, and the family of the late John Livingston, of Listowel, Ont., the flax mill here, as well as a number of others, will not be operated this season."

The annual general meeting of the shareholders of the Dominion Cotton Mills Co. was held at the offices in Montreal last month. The old board of directors was re-elected, viz.: A. F. Gault, president; Jacques Grenier, vice-president; D. Morrice, S. H. Ewing, Hon. J. O. Villeneuve, C. E. Gault and D. Morrice, jr.

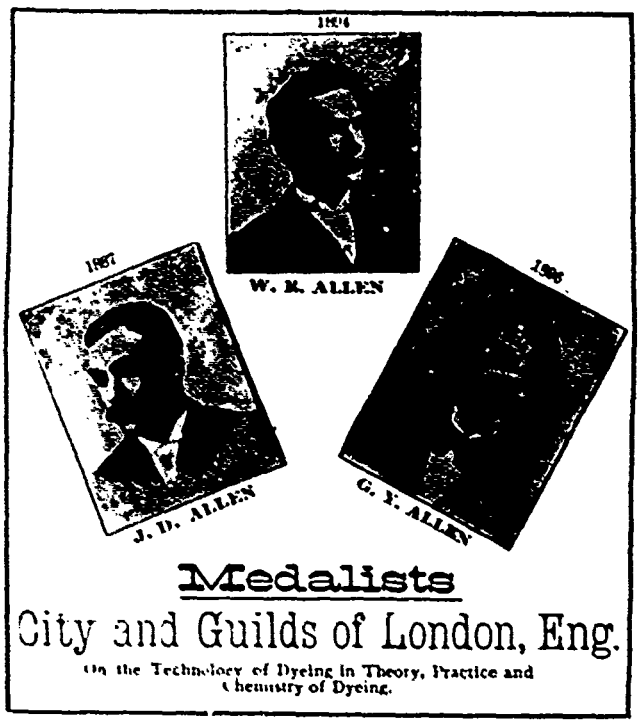
We understand that James Lockhart, Son & Co. have already settled with their creditors by a payment of 48 cents on the dollar, and will resume business as woolen manufacturers' agents. They will continue to represent the Slingsby Manufacturing Co., of Brantford: the Hawthorne Woolen Mill, Carleton Place, and Canadian mills.

The Markham Woolen Mill is to be put up for sale on the 27th of May. There are three mortgages on the property, making a total of $19,000. Of these three, the first of $12,000 to the Canada Permanent Loan Co., has been partly paid off, and the forthcoming sale will determine the position of those interested in the mill, which meanwhile is closed down.

Any one conversant with matters textile will recognize a number of familiar names among the officers of the Almonte, Ont., cricket club: Hon. president, B. Rosamond, M.P.; hon. vice-presidents, Dr. Lynch and Wm. Smith; president, Jas. Rosamond; vice-presidents, D. M. Fraser and James W. Wylie; secretary-treasurer, Dr. Hanly; captain, Alex. G. Rosamond.

The employees of the Dominion Cotton Mills Co.'s mill at Kingston, Ont., met at Wm. Lowe's house to make a present to Mr. Lowe, who had severed his connection with the mill, and accepted a good position at the Montreal Cotton Co.'s mill at Valleyfield, Que., as overseer of the sizing, spooling and warping department. M. Campbell, carder, in a few well-chosen words, expressed the sorrow of the employees at losing Mr. Lowe, and wishing him every success in his new undertaking, and then called on Geo. Wilson, paymaster of the mill, to make the presentation. The present consisted of a beautiful pipe and smoking set. Mr. Lowe feelingly replied, after which a very pleasant time was spent.

It has been decided to remove the plant of the Elora Carpet Factory to Sherbrooke, Que., terms having been arranged for the establishment of the factory there. The city is to give a bonus of $30,000 on condition that at least 150 hands shall be employed in the factory. The new company, in which Mr. Dresser, of Sherbrooke, is interested, is called the Dominion Brussels Carpet Co., and is to be located in the building formerly occupied by the Eastern Townships Corset Co. The machinery will be removed from Elora as soon as an additional building is erected to complete the work. The new company have just bought all the carding and spinning plant owned by John Harvey at Elora, for $2,000, and the weaving plant at present consists of 13 brussels looms and 8 ingrain looms. It is intended also to manufacture wilton carpets when the new factory is in running order. Frederic Talbot is to be mill superintendent.



TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the values in sterling of the textile imports from Great Britain for March, 1896 and 1897, and the three months to March, 1896 and 1897:

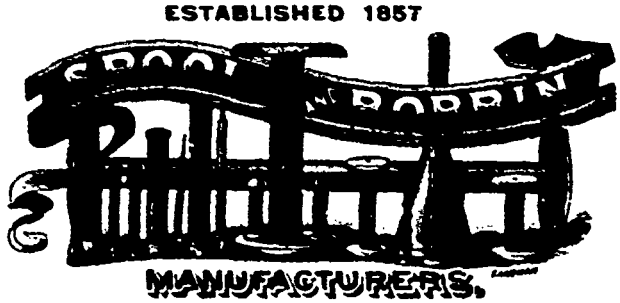
	Month of March		Three months to March.	
	1896.	1897.	1896.	1897.
Wool	£ 84	£312	£3,382	£2,672
Cotton piece-goods	48,742	31,808	186,839	134,506
Jute piece-goods	11,927	8,447	38,513	26,738
Linen piece-goods	12,633	9,924	57,681	35,728
Silk, lace	1,342	761	4,459	2,048
" articles partly of	2,013	1,548	10,033	6,005
Woolen fabrics	23,733	23,381	77,302	71,546
Worsted fabrics	60,979	41,233	188,192	177,892
Carpets	29,624	23,712	84,709	64,811
Apparel and slops	37,579	25,596	107,906	69,732
Haberdashery	15,475	20,414	54,872	52,989

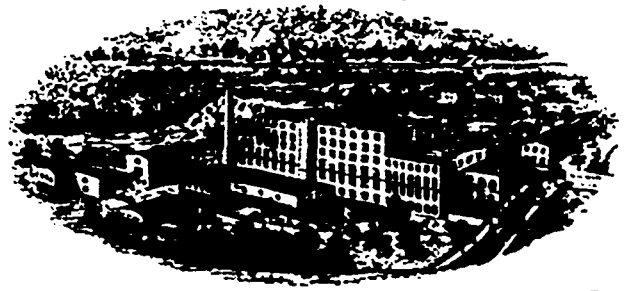
THE WOOL MARKET.

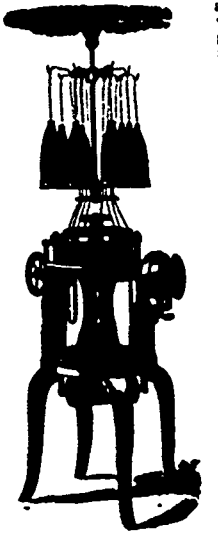
TORONTO.—The wool market has presented no new features during the past month. The demand from the United States for Canadian wools continued, and whatever parcels came into the market were hurried across the line in anticipation of the duty. Prices are nominal. We quote fleece combing, 22c.; clothing, 20c.; tub washed, 20c.; rejections, 17 to 18c.; pulled super, 20 to 21c.; extra, 21 to 22c.

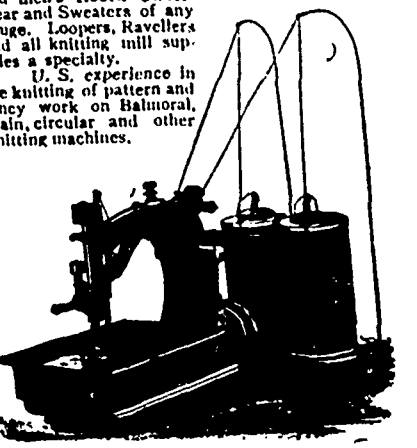
MONTREAL.—The market has been very quiet, owing to uncertainty of the results of the present tariff changes. A few sales of Cape wools to supply immediate demands are reported at full prices, 14 to 16½c The decline of about 5 per cent. which marked the opening of the third series of London sales on May 4th, has not affected the market perceptibly.

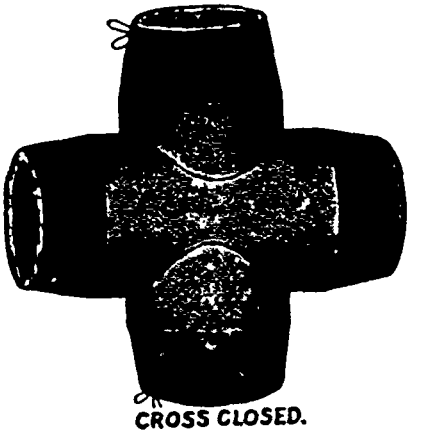
John Muldrew & Co., wholesale woolens, 22 Front street west, Toronto, have effected an arrangement with their creditors by which they compromise on a basis of 50 cents on the dollar cash. In October, 1896, they called a meeting of creditors, and offered 75 cents on the dollar on time. This was accepted by the creditors, but it is understood that only the first payment was met. The liabilities then were in the neighborhood of $50,000. The new arrangement supersedes the first offer, and any payment made on that will be included in the new offer.

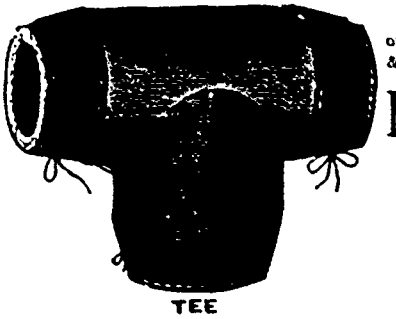












Leopold Cassella & Co., of Frankfort on-the-Main, Germany, for whom Wm J. Matheson & Co., 425 St Paul street, Montreal, are Canadian agents, have issued a very handsome folding card of new shades of cyanole extra, indigo blue SGN, and indigo blue N., the thirty-six samples being dyed at the boil with the addition of 10 to 15 per cent of bisulphate of soda.

Arrangements are being made by Schlistig Bros., of Brooklyn, N Y., to erect a factory, and manufacture glue, combs, buttons and fertilizers in Ontario. Three members of the firm have been recently on a tour of inspection at Toronto, West Toronto Junction and Hamilton, and have expressed the intention of going into the business at one or the other of these places. They propose to erect a factory and plant, it is said, costing five hundred thousand dollars, and giving employment to between three and four hundred men.

The old-established house of John Silver & Co., wholesale dry goods, Halifax, suspended payment on Friday, April 30. This firm has been a familiar landmark for over half a century and was thought to be in a very sound condition. The liabilities are about $35,000. The assets are nominally put down at about the same figure.

CHEMICALS AND DYESTUFFS.

Owing to the late arrivals of steamers, the volume of trade is curtailed, buyers preferring to hold off for goods coming out at summer rates of freight Chemicals are fairly steady. Chlorate, potash and soda are easier. The following are current quotations in Montreal —

Bleaching powder	$ 2 00	to	$ 2 10
Bicarb soda	2 25	"	2 30
Sal soda	0 75	"	0 80
Carbolic acid, 1 lb bottles	$0 32½	to	$0 35
Caustic soda, 60°	1 80	"	1 90
Caustic soda, 70°	2 25	"	2 35
Chlorate of potash	0 15	"	0 20
Alum	1 35	"	1 50
Copperas	0 70	"	0 75
Sulphur flour	1 75	"	2 00
Sulphur roll	1 75	"	2 00
Sulphate of copper	6 00	"	7 00
White sugar of lead	0 07	"	0 08
Bich potash	0 10	"	0 11
Sumac, Sicily, per ton	55 00	"	60 00
Soda ash, 48° to 58°	1 25	"	1 50
Chip logwood	2 00	"	2 10
Castor oil	0 09½	"	0 10
Cocoanut oil	0 06½	"	0 07

TWO-COLOR DYEING.

A firm of English dyers has recently completed experiments with a simple method of dyeing, by means of which a thin felt or cloth may be dyed with a different shade on each side, thus producing a reversible cloth giving the effect of an ordinary dyed felt or cloth with a lining. As applied to mantle cloths, skirting felts, boot and shoe felts, hat felts, and goods of a like kind, material treated in the way provided will probably be very useful, the necessity of an extra lining being done away with. The cloth or material to be treated is in the first instance dyed through in any shade of color that may be desired in any ordinary manner. The material is then finished by the ordinary and usual processes, after which it is taken to a printing machine, which is provided with a roller engraved uniformly all over the surface with diagonal lines cut somewhat deeply and running in one direction over its surface, while diagonal lines cut less deeply are arranged running in the other direction. This roller dips into a bath of color of the required shade and carries it up to the cloth, which is, by means of other rollers, brought into contact with the dyeing roller. With a view to preventing the color from the dyeing roller penetrating too deeply into the texture of the cloth, the dyeing roller is carefully adjusted in its pressure so as to prevent the second color going more than half way through the thickness of the piece. Screw levers are arranged upon each end of the roller, by means of which the pressure may be graduated as desired After the second color has been applied to the cloth the latter is steamed and finished in any ordinary manner

WHAT THE MANUFACTURERS WANT.

Representatives of the woolen mills of Canada had a private meeting at the Russell House, Ottawa, Ont., to consider the effect of the tariff changes upon their industry. Those present included Messrs. Willett, Chambly, Forbes, Hespeler; Pattinson, Preston, B Rosamond, Almonte; D. Morrice, Trent Valley Woolen Mills, Sykes & Ainley, Georgetown Woolen Mills; Gillies, Carleton Place, T. B Caldwell, Clyde Woolen Mills, Lanark; Horsfall, Montreal Woolen Mills; John Carnegie, Peterborough Woolen Mills, James Kendry, M.P, Auburn Woolen Mills, Peterborough; J. Reid, Renfrew, and John Turnbull, Paton Manufacturing Co., Sherbrooke, Que. After a long consultation, a written statement, embodying the views of the deputation, was prepared and submitted to the Government by Messrs. Willett and Gillies. It is understood that in this document the woolen men expressed their willingness to accept a duty on all classes of woolen goods not less than 32½ per cent. They also protested against the new duty on yarns, which should not be less than 30 per cent.