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# Canadian Journal of Fabrics

THE JOURNAL OF THE Textile Trades of Canada.

Vol. XIV. TORONTO AND MONTREAL, NOVEMBER. 1897. No. 11.

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## Canadian Journal of Fabrics

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### CONTENTS OF THIS NUMBER:



## Editorial.

**The Australian Wool Crop.**

Owing to the drought there is a considerable shortage in the Australian wool crop this season. The Melbourne *Argus* estimated the deficiency in New South Wales at 15 per cent., in Victoria at 10 per cent., in South Australia at 20 per cent., and in Queensland at 5 per cent. This small total added to the old clip wool, may, with the addition of 10,000 to 12,000 bales Cape wool, un up to a gross available of some 125,000 to 130,000 bales for the sales commencing November 25th, which under the stress of th small stocks of raw wool in consumers' hands, not only in London, but on the continent, bids fair to ensure an extremely firm and active market once more for good merino wool. The selection of crossbred wool will be the very smallest and poorest of any of the series of the present year. At the public wool sales in Australia prices rule very hard, at an advance of 10 per cent. over last year's rates, but the same difficulty is being felt there on the score of adequate supplies to keep the sales going.

**Combinations.**

The textile industries are not free from the end-of-the-century tendency to form combinations. In Canada we have the combinations in the cotton trade, and in Britain there are the two great sewing thread combinations. In textile machinery making not long ago there was an amalgamation of three loom-making firms in Blackburn, and just recently four or five of the leading makers of card clothing have joined their fortunes. Another combination is just announced from Scotland, the well-known Turkey-red dyers of the Vale of Leven, the firms of Archibald Orr Ewing & Co., John Orr Ewing & Co., and William Stirling & Sons, having amalgamated, and made it known that from the 1st January next they will conduct the united business under the designation of "The United Turkey-Red Company." This system of combining firms is an importation from America, and has originated in, if it has not been compelled by, the severity of competition experienced in every industry. The principal advantage expected to be derived is, of course, a great reduction of competition, which will enable the combining firms to maintain prices that shall yield a profit. "This movement," says the *Textile Mercury*, "shows signs of extending still further, and we shall not be surprised if other important developments take place at an early date."

**A Lawful Fraud.**

It is not enough that our insolvency laws, or lack of them, should injure our credit abroad; but present conditions put a premium on dishonesty at home. With proper legislation on the subject of bankruptcy it would not be possible for the wholesale traders to encourage fraud, as they do under existing procedure. As business is at present conducted, two retail dry good merchants may occupy adjoining premises, the one buying wherever his money enables him to make the most advantageous bargains, selling at a fair profit and paying his obligations in full as they fall in. The other may be a man, perhaps of no business experience, but qualified for his position by a cer-

tain ability at the game of bluff. He has been started in business by some more or less unsubstantial wholesale house anxious to secure paper to put through the bank, and having no other account in the town. Our honest, but inexperienced friend, pays the firm which started him more or less on account for a few years, gradually extending his credit and buying more largely from other houses. Bargain sales are frequent, prices are marked down to cost or below it, money is got in somehow or other. The promoting wholesaler has had a good deal of cash on account, he has notes to cover the rest, and—most beautiful feature of the whole system—when the inevitable crash comes, he is a preferred creditor, and is able to clear a nice little profit on the whole transaction. Our honest retailer and his honest backer have both made money. The firms which have recently opened accounts for the former may get 25 cents on the dollar; and all the parties to the game proceed to play it again. The merchant next door who all this time has paid one hundred cents on the dollar, finds his capital gone, his stocks depreciated by his rival's price-cutting, and is forced to the conclusion, that if the law does not soon make an honest man's path plainer, he will be driven to stealing too.

**Fireproof Construction.**

There has been a great deal said of recent years about fireproof construction in mill-building. The fireproof idea has taken hold of builders generally, and it has been introduced wherever architects could persuade capitalists to allow them to experiment with all the pleasant new problems of girders and terra cotta coverings. The truth is, however, that while a fireproof building will not burn up, it will fall down whenever it gets even moderately warmed, as the girders and pillars become pliable at even a not very high temperature, and by yielding very slightly cause the entire building to fall. This is clearly shown by the following extract from the *Timber News:* "Another fireproof building destroyed. The statement reads like a contradiction of terms, and so it is. But there are hundreds of architects who will not believe it; none are so deaf as they who will not hear, and none so blind as proud philosophers who will not see. The fact is that a five-story, brick-built, brick-arched, iron-girded, iron-windowed, iron-roofed, guaranteed absolutely fireproof factory, was completely gutted by fire in the short space of two hours. Floor after floor tumbled, and in two hours the structure was a complete wreck." This is a valuable suggestion to the manufacturers in Canada who are thinking of extending or rebuilding their mill premises. The slow burning construction, *i. e.*, that in which solid timber and plaster-filled floors are a prominent feature, is much to be preferred to the so-called fire-proof construction which is after all only an experiment, and so far has nearly all the evidence against it.

## DYEING.

The following lecture, delivered by Prof. J. J. Hummel, director of the dyeing department of the Yorkshire College, Leeds, Eng., at the Imperial Institute, should be of interest to textile manufacturers.

The lecturer introduced his subject by giving a brief historical survey of the rise and progress of dyeing, in the following terms: The origin of the art of dyeing is shrouded in the mists of antiquity, and it may now be impossible to discover all the ways and means by which it has been developed from its earliest and simplest beginnings. Its practice, no doubt, originated with the first dawn of civilization in different parts of the world, so that long before facts and history were recorded, the art of dyeing had considerably advanced among some nations. Historical evidence points to the conclusion that already at a very remote period there existed a high degree of civilization in Persia and India, and there are many reasons for believing that the arts of dyeing and printing have been practised in India during a long succession of ages. From a very early period Indian manufactures and products were highly prized throughout southern Asia; gradually they found their way to Egypt, with which country an intercourse seems to have existed from the earliest times, by way of the Persian and Arabian gulfs. In due course the Egyptians themselves began to practise the arts of dyeing and calico printing, no doubt utilizing the knowledge and materials derived from India, and we have a record of the methods they employed, as witnessed by Pliny. He says: "In Egypt garments are dyed by a very singular process. They are first cleaned, then painted, not with colors, but with substances fit to absorb color. These substances are not to be seen on the cloth at first, but after plunging the latter into the dye-vessel, they are taken out a moment afterwards quite dyed, and what is most wonderful is, that whereas the dye-vessel contains only a single coloring matter, it nevertheless imparts different colors to the stuff plunged into it, painting as it boils." From this passage, then, it seems that the ancient Egyptians knew how to apply in practice the art of dyeing with the aid of certain metallic salts, as I shall afterwards explain. Curiously enough, the Greeks and Romans seem to have made but slight advance in the art of dyeing. About the fifth century, any little progress there might have been was completely arrested by war, and it did not revive till about the end of the twelfth century, when we find the principal seats of dyeing to be Venice and Florence, where during the barbarism of the preceding period, a decayed remnant of the art had survived. From Italy some knowledge of dyeing spread gradually to France, Spain and Flanders, and it was from the latter country, where considerable perfection in the art had been attained, that Edward III. procured dyers for this country, where, in 1472, a Dyer's Company was incorporated in London. The subsequent discovery of America, in 1492, and the opening up of the way to the East Indies round the Cape of Good Hope in 1498, gave a new impetus to the industry of dyeing. A number of new dyestuffs were introduced by the Portuguese, Spaniards and Dutch.

The Indian products now come direct to Europe, round the Cape, without passing through the hands of the merchants of Persia and Asia Minor, and with the art-fabrics came also information as to the methods of their production. It was in this way that the art of calico-

printing was introduced in Europe, and not, as might have been supposed, by gradual development from the remnants of the ancient Egyptian art. The new industry established itself with success in France; the revocation of the Edict of Nantes caused it to be disseminated to other countries, and thus it was that in 1690 a printing business was established at Richmond, in Surrey. In the beginning of the 17th century, the English, Dutch and French began to establish settlements along the coast of India and rapidly displaced the early Portuguese settlers. In due time the Hindoo methods of dyeing and printing were described by several writers, and from time to time samples, and, in some cases, large quantities, of a variety of Indian dyestuffs were forwarded by officials and travelers connected with the British and French East India Companies, with the object of introducing them to the European dyers. Early experiments in a practical direction were made with them in this country by Bancroft, and in France by Gonfreville, both of whom have left interesting records of their results. In recent years the tinctorial properties of the Indian dyestuffs have been examined by Sir Thomas Wardle. The results of this examination were published in a Blue-book, entitled a "Report on Dyes and Tans of India," but, unfortunately, the methods of application were not made public. I had an opportunity in 1881 of seeing Sir Thomas Wardle's collection, which is displayed here this evening, and my further interest in Indian dyestuffs was awakened on the occasion of the Indian and Colonial Exhibition of 1886, when I had the pleasure of making the acquaintance of Dr. Watt, who was in charge of the Economic Court of the Indian Section of the Exhibition. At that time Dr. Watt was good enough to give me a small collection of Indian dyestuffs, and with these experiments were first made, with the view of studying in detail their tinctorial properties.

With the foundation of the Imperial Institute, it seemed possible that we might obtain further supplies of Indian dyestuffs with which to continue our work; hence it was that at the instance of the Committee of the Clothworkers Department of the Yorkshire College, I visited Sir Frederick Abel some years ago. He gave me every encouragement and hope that our desires would be fulfilled, and from that time to the present, we, in the Dyeing Department of the Yorkshire College, have assisted in the work undertaken by the Scientific Department of the Imperial Institute. This may explain why I have been asked to speak to you this evening on some of the "Indian dyestuffs." From the books of various writers on Indian dyestuffs, more particularly from Dr. Watt's "Dictionary of the Economic Products of India," it would appear that there are some 350 Indian plants recognized as dyestuffs. Of these we have examined tinctorially, at the Yorkshire College, about 100 species, employing small samples received from the Imperial Institute. A few have been examined chemically in the Clothworkers' Research Laboratory, by A. G Perkin, F.R.S.E., who is associated with me in these matters. This part of the work necessarily proceeds more slowly, partly because of the tedious nature of the investigations, and partly because the large supplies of material necessary for the examination take some time to collect, but in this discourse, and in the collection of specimens, the results of Mr. Perkin's labors may be seen.

Now, in the brief period of a lecture hour, I can only give a very imperfect account of the Indian dyestuffs; hence I must confine your attention to a few only, and endeavor to illustrate their varied properties by the aid of a few simple experiments, referring you for further details to the article on Indian dyestuffs, which appeared in the March number of the Journal of the Imperial Institute for the present year (1897).

The lecturer then proceeded to arrange the Indian dyestuffs in three groups, in accordance with their general dyeing properties, viz.: (1) Non-mordant dyestuffs, that is, those which dye the textile fibers direct, without the aid of any special fixing agent or mordant. (2) Mordant dyestuffs, that is, those which only yield useful dyes when some fixing agent or mordant is employed. (3) Tannin matters, that is, those which contain tannic acid or some closely allied principle. Certain typical Indian dyestuffs in each class were dealt with, their chemical properties and the method of their application in dyeing and printing being demonstrated by means of appropriate experiments.

The dyestuffs belonging to the first class referred to were Indigo, Turmeric, Annatto, Kamela, Safflower, and a few plants (Fibraurea tinctoria, Toddalia aculeata, etc), which contain berberine. In connection with indigo, the methods of obtaining and preparing the commercial product were described. The modes of dyeing wool and silk by means of indigotin-disulphonic acid (indigo-extract), and cotton by means of a solution of the reduction product (indigo-white) according to the vat method, were illustrated experimentally. The resist and discharge methods of producing calico prints were also described and illustrated, including the knot-dyeing of India.

With the other dyestuffs of this group samples of cotton and silk were dyed, and their positions as dyestuffs were discussed, from which it appeared that they have practically no chance in competition with the coal tar coloring matters. In speaking of the mordant dyestuffs the lecturer dealt with madder (Rubia tinctorum), chay-root (Oldenlandia umbellata), al root (Morinda citrifolia), Indian madder (Rubia cordifolia), Ventilago madraspatana Artocarpus integrifolia, Datisca cannabina, Myrica nagi and Butea frondosa. The results obtained in the Clothworkers' Research Laboratory were briefly referred to, and after explaining the facts that in many cases the coloring matters were present in the plants as glucosides, that is, peculiar compounds with sugar which possess no dyeing power, the lecturer proceeded to explain the general principles of dyeing with this class of dyestuffs by means of mordants. The material to be dyed is first treated in such a manner as to fix upon it the oxide of some metal, usually iron, aluminium, chromium, or tin; these are the so-called mordants with which the coloring matters combine when the mordanted fabrics are boiled in the dye-wood decoctions. During this operation, or in some cases even before, by reason of the occurrence of fermentation

the glucosides are decomposed, thus enabling the free coloring to combine with the metallic oxide. The tannin matters were referred to as including the most numerous of the Indian dyestuffs, and their utility to the color manufacturers as furnishing tannic and gallic acids, and to the dyers for the purpose of fixing the basic coal-tar colors, was fully explained and illustrated by experiment. In this latter connection cotton is first prepared with a cold decoction of the tannin matter, from which it attracts a certain amount of tannic acid; this is fixed upon the fiber as insoluble tannate of antimony by a passage through a solution of tartar-emetic, and finally combines with the color-base in the subsequent dye-bath containing the coloring matter, which is thus fixed as an insoluble lake upon the fiber.

Catechu, or cutch, was referred to as one of the most important of the Indian tannin matters, and the method of applying it in dyeing fast browns upon cotton was explained. The results of the practical examination of a considerable variety of Indian catechus supplied by the Imperial Institute were given, from which it appeared that the more soluble lustrous varieties which seemed to be rich in catechu-tannic acid, gave much better and richer colors than the less soluble earthy-looking varieties containing catechin. After pointing out that the Indian dyestuffs were now being investigated both from the practical and scientific points of view, the lecturer observed that with respect to red mordant-dyestuffs it was not likely that any new ones of importance would be discovered in India, but possibly some yellow mordant dyestuffs or some tannin matter might be found, which might prove of value to Indian if not to European commerce. His opinion was, however, that the chief interest of such investigations was more likely to be found on the scientific side, for by isolating and determining the constitution of the coloring matters of the Indian dyestuffs, it might become possible to prepare some of them by artificial means, or even to synthesize new products belonging to the same type, having all the advantages of the natural products, such as dyeing direct, like safflower and turmeric, but without such defects as sensitiveness to alkalis, light, etc.

## THE MILL REPAIR SHOP.*

BY D. D. DONOVAN, PROVIDENCE, R.I.

The subject of a properly equipped repair shop for the mill is worthy of the serious attention of the mill manager. The most curious and important part of this question is, that an erroneous idea has almost always prevailed, and that is, that a repair shop is a source of constant financial drain on the factory, and furnishes no return for the money that is laid out to thoroughly equip it to do the work in the most advantageous manner, both in point of time and quality of work. How this idea originally crept in, and how the tradition has been kept up, is a mystery to a mechanic acquainted with cotton or woolen factory business. There is just as much chance for improvement in the repair shops as there is in the factories themselves. In this age of competition and close margins, it is not only of the utmost importance to have the mill equipped with the most modern machinery, but it is of equal importance to keep the machinery running up to its very highest efficiency. To accomplish this result, preparation must be made, so that when the inevitable accident occurs, it may be remedied in the best possible manner and in the shortest possible time, and the work of production resumed. I do not refer here to the possibility of a breakdown of the engine, or to any other accident that would cause a shut down of the mill, but to those minor accidents that interfere with the regular working of the plant, and for grappling with which, and making right as quickly as possible, a regular corps of workmen is employed. To effect the most speedy remedy for these troubles, facilities should be provided beyond what are found in many of our mills. This may mean the outlay of a few hundred dollars, from which no direct return is perceived by the management, but this outlay will show at the end of the year on the profit side of the balance sheet.

The master mechanic and the men employed in the repair shop are thoroughly conversant with its needs, but they are not always successful in impressing the managers with the fact that the proposed expenditure of a few hundred dollars for new tools will mean a great saving in the time occupied in making needed repairs, as well as in improving the quality of the work. The engine lathe, the planer, and the drill press, find places in all repair shops. If these tools are kept in good condition, they are important factors in any shop, and some years ago they would have been considered about all that was required. When we consider the rapid strides that machine-shop equipment has made in the last few years, and how necessary it is to take advantage of the latest improvements, in order to keep up with the procession that is ever moving onward and upward to a higher degree of efficiency in the construction of machine-shop tools, we must note the fact that the most successful firms are the ones that adopt the highest class of machines and the most approved methods of shop management. This will apply with equal force to the mill in all its departments, as well as to those engaged in the manufacture of machine tools. A stock room where parts of machinery that are liable to give out could be made up and kept on hand for use when required, would greatly facilitate the making of repairs, for the cost of the part is very slight as compared with the loss occasioned by the stoppage of the loom or other machinery while the repairs are being made. How much time is often consumed in ordering a casting for a gear blank from the foundry, chucking the hole, turning in the lathe, and cutting the teeth in an old rattle-trap gear-cutting machine, the only excuse for retaining which in the shop is that there is not enough work for a machine of this kind to warrant purchasing a new one, no thought being given to what it costs in loss of time to retain the old tools. The practice among all successful machine builders is to replace the old tools with new ones, as the efficiency of the old becomes impaired; and the same practice prevails in the mill so far

* A paper read before the Cotton Manufacturers at their recent Philadelphia convention

as the mill machinery is concerned, but some persons seem to think that the machinist having a hammer, a cold chisel, and a file, with possibly an old lathe, is provided with all the tools required to do the repairs in the mill. If the machine shop and the mill require so much care to keep the working machinery up to a high standard of efficiency, the same principle applies to the mill repair shop. Drills, resumers and measuring instruments can now be purchased at such reasonable figures, that no shop can afford to be without a supply sufficient to meet all requirements. For quick and accurate measurements the micrometer caliper furnishes one of the best means. By its use, parts may be duplicated with an exactness that can be obtained in no other way.

The subject of reamers is worthy of a little attention. The day of the old solid reamer is gone by, except as a machine or roughing reamer. For finishing holes and keeping to uniform sizes, the adjustable blade reamer takes its place, and as this style of reamer may be purchased at only a slight advance in cost over that of the solid ones, its use will be found to be a saving.

## ART IN TEXTILE PRODUCTION.*

Director France spoke in part as follows:

"The importance of a careful training in the technical processes of the textile industry is beginning to be realized in this country, although the extent to which this is true is by no means commensurate with the immense interests at stake. As a nation we have spent many years in the development of ideas tending toward the improvement of our textile machinery. The aim has been more production, more yardage, more saving of labor; and this end has been attained. Up to the present time, thanks to the development of our mechanical appliances, we have been enabled to meet foreign competition in many lines of production, but it is needless to deny, or to attempt to persuade ourselves to the contrary—the day of reckoning has arrived. We are on the threshold of the closest kind of competition with men who have the advantage of us in many ways and in many lines of textiles; the foreigner has all our economic appliances, and he has also the skilled craftsmen trained in the artistic branches which we have systematically neglected. He has watched our wonderful mechanical progress, and he has set himself to surpass us on other and perhaps more profitable lines. After a little careful study it was apparent that quality rather than quantity was, after all, the chief factor in the problem, and to attain success in this direction it was recognized as indispensable that not only the working classes, but the manufacturers as well, must be educated to higher and finer standards of taste.

Europe recognized long ago the supreme importance of educating its people in the technical details of their vocations, and this has especially been true of textiles. Many schools have been established by different Governments for the diffusion of knowledge in relation to this important branch of manufacture, and the claim that Germany's supremacy in manufacturing is mainly due to her generous provision for systematic education of this kind, is heard on every hand, and is generally accepted. The lesson for American manufacturers is plain. If we expect to win our way to the highest kind of success in textile production we must build better in the years to come than we have built in the past. We should begin by insisting that provision should be made for industrial art and technical instruction in connection with the grammar school grades. It is idle to talk about what we have accomplished without this kind of education, and to compare ourselves with others who have it. The thing to think about is not what we are, or have been, or have done, without it, but what we would have been, and what we may accomplish, with this aid. Add to an adequate protective tariff, textile training schools, industrial, industrial art and technical schools, and we shall not only retain our own, the best market of the world, but we shall slowly perhaps, but surely, gain a stronger foothold for our goods in the world's markets. It is the nation which possesses the most skill which will win in the race. The country which expects or deserves to make fabrics which will find a ready sale in the markets of the world, must see that her citizens engaged in the manufacture of such goods, not only possess a knowledge of the minutest details of the various operations, but that they also have a training which will supply that refining influence of culture and taste which is essential to all high-class production.

The truth that needs to be brought home to those who are looking to technical education for the solution of the industrial problems which press the hardest upon us, is that culture, of the most thorough kind, is not to be dispensed with, but directed. It is, unfortunately, rather easy to believe that it can be dispensed with; that our boys need not go to college at all, because so many that have gone fail to make profitable use of the things they learned. If people draw such conclusions as this, they make a great mistake. The demand for culture of the most thorough kind was never so great as it is at this moment, and it was never demanded so persistently as it is by the industrial classes in whose interest this great movement for technical education is going on. It is not less cultivation, then, but more, that we are after, and the business of the technical school is not to withhold it, but to increase and multiply, under proper direction, the forces that make for culture and refinement. The need of this manifests itself in various ways. On the side of science, the lessons are obvious and do not need to be insisted upon here. However definite and specific the aim of the future manufacturer may be, it is a truism that his success will depend upon the amount of knowledge which he is enabled to carry from the school into his business.

The industries of the world are rapidly being transformed by the revolutions wrought by science and the development of scientific processes. The old methods of doing things are rapidly giving place to new ones, which the laboratory of the chemist and of the mechanician have developed, and the road to success in any branch of econo-

* Abstract of a paper read before the New England Cotton Manufacturers Association, by E. W. France, Director of the Philadelphia Textile Schools.

mic production, lies through the portal to which science holds the key. It is apparent, however, that in one other direction the real requirements of the case do not seem to be so well understood, and seem to demand our serious attention and the most serious advocacy. But it is not, after all, on the side of science alone that our industrial needs are most apparent to-day; it is on the side of art. It is in matters of taste that we most need training; it is the artistic element that constitutes the charm of textile productions and enables the good fabrics to hold the market. No amount of cheapening of processes can compensate for the absence of this quality, and no amount of merely technical education or mechanical skill can supply this want. Manufacturers and those who direct the affairs of great establishments, often excuse their own shortcomings in this regard by saying that matters of taste are no concern of theirs; that they try to understand the demands of the market, and are willing and even eager to produce the ugly things, as well as the beautiful, if the public seem to want them. This familiar form of argument is at once a fallacy and a confession. On the one hand the man who uses it really does not as a rule know what is good and what is bad himself and is in his heart more or less conscious of his own deficiency in matters of this kind, and on the other hand, the public is certainly ahead of the manufacturer in matters of taste. The product of foreign looms has found, and its finding a market in our midst, not because it is cheaper, but because it is more beautiful; and it is more beautiful, not because of the employment of better machinery or more economical methods of production, but, because its character is determined by a finer taste. This is the real secret of the whole business. We shall fail to command in the future, as we have failed to command in the past, the market for the higher class of goods, until our workmen and designers are as tasteful as those on the other side.

The infusion of this element of beauty into our products in the future, means training in art for the men who are to do the work. It means that if his efforts are to achieve success, the student of the textile school must devote a great deal of his time to the pursuit of art; must be familiar with the principles, not only of chemistry and mechanics, but of form and color. He must be familiar with, and appreciative of, the essentials of grace and beauty, quite as much as he is with the nature of fabrics or the efficiency of machinery, for unless he can incorporate in his work the element of charm which only the æsthetic sense can provide, the most important part of it has been left undone. Earnest advocates of the art idea as a true panacea of our industrial shortcomings, have by no means been wanting, and endowments for the establishment of art schools have been made on the most liberal scale. The fundamental truth on which this effort is based is undeniable, but the discouraging fact remains that the connection between this purely artistic effort and the actual processes of manufacture, have for the most part still to be made; the chasm which still yawns between art and industry has still to be bridged. Much remains to be done on both sides, for if the technical schools have been too mechanical in their methods, the art schools have been too much occupied with things whose connection with industry has been too remote to make their influences felt.

In the first place a great deal more attention ought to be paid to the study of nature in its more decorative aspects—that is, of flowers, fruits, birds, and all such simple forms of natural things. With this study of nature must be associated that conscious and deliberate adaptation of her forms to the purposes of practical design, which is fundamental in all practical work, intelligent conventionalization being the corner-stone of all good work in applied design. Secondly, the practical design means an intelligent grasp of the limitations imposed by the processes of manufacture. Such character as industrial design assumes that entitles it to respect and consideration as bearing the impress of that indefinable quality which we call style, is due to the frank recognition of these limitations, and to that wise adaptation of means to ends which such recognition skillfully adapts itself to meet the conditions thus imposed. It is through such practice as this that the student is prepared to take up the study of historic styles of ornament, because only in this way does he learn to understand style itself. Grammar of ornament is almost as much a study of historic tradition as is the grammar of language, and this element of the problem can no more be neglected in the study of art than it can be in the other.

## TECHNICAL TRAINING.

The technical instruction committee of the Manchester corporation, controlling the Municipal Technical School and the Municipal School of Art of that city, in July of this year appointed a deputation to visit the principal technical schools, institutions and museums of Germany and Austria. The deputation occupied two months in performing their mission, and their report is an important document. The technical instruction committee desires by circulating the report, to arouse attention to the need of giving suitable preliminary training in art and science in their particular application to our chief industries, especially to day students of good general education, who wish to enter upon an industrial career.

Schools and institutions visited are: The Royal Weaving School and Textile Museum, and the Royal Dyeing and Finishing School, Crefeld; the Royal Technical High School, and the Royal Spinning, Weaving, Dyeing and Finishing School, Aix-la-Chapelle; the Industrial Art Museum, Dusseldorf; the Grand Ducal Technical High School, with the Physical and Electro-Technical and Chemical Institutes, Darmstadt; the Royal Technical High School, Charlottenberg; the Municipal Higher Weaving and Dyeing School, and the Industrial Art Museum and School, Berlin; the Polytechnic, Dresden; the School of Art, and the German and Bavarian Museums, Nuremburg; the Museum and School of Industrial Art, the Commercial Museum, the Museum of Hygiene, and the Technical School, Vienna.

The deputation found the dyeing and finishing school at Crefeld to be a state-maintained institution, equipped on a most liberal scale. Much attention is given by the students and teaching staff to the examination of coloring

matters, and to experimenting, with a view to the discovery of new materials and processes. As illustrating the esteem in which this school is held, the deputation was informed that it is entrusted by the Royal Gobelin factory at Berlin with the dyeing of the yarns used in its special productions, which offer many serious difficulties in obtaining the delicate shades required. The school makes every effort to assist manufacturers by undertaking investigations as to the dyeing and finishing of materials submitted, and the information thus given is often of the utmost value, commercially, to its recipients. In the weaving school, provision is made for the reception of every new loom as soon as it is placed on the market. One beneficial result of this system of training has been experienced in the town of Crefeld itself, which, when the silk trade was depressed, was enabled to maintain its position as a textile centre by the promptness with which its manufacturers were able to turn their attention to other branches of the industry. In the textile school at Aix-la-Chapelle, the system of training adopted is somewhat different. A number of ordinary workmen are employed in the spinning, weaving, and finishing of woollens and worsteds, and these men instruct and are assisted by the students of the school. Material is supplied by the manufacturers of the district, and is worked up and charged for at cost prices, the school being responsible for the quality and perfectness of the workmanship. In this manner about 60 pieces are turned out per week. This system, to my thinking, has a good many points to recommend itself.

No textile school in England offers such advantages to any young man desiring to become a manufacturer. He has to pick up his knowledge as best he can, and the important part of blending raw materials is totally overlooked, both at Leeds and Bradford textile schools, while carding and spinning are unknown. But as showing the thoroughness and zeal with which the German government supplies the means of technical training in the various industries, the deputation were told that if a paper dealing with some department or detail of the textile industry is read before any foreign society, and is published, the communication is immediately translated and circulated through the textile schools, lantern slides for illustrative purposes being sent with it. Among other things, the report states that the deputation are convinced that the textile schools of Germany are of singular value in training up a supply of well-instructed men, fully capable of occupying positions as foremen, managers, and manufacturers in their several industries. As illustrating the results of a similar system of technical training in the chemical industries, it is stated that the command of the world's markets in coloring matters and other products of coal-tar, the value of which is estimated at £10,000,000, is in the hands of the Germans, to the extent of three-fourths. Stimulated by this success, the educational and industrial leaders of Germany have instituted similar methods to secure the development of the electrical engineering industry.

Electric laboratories have been erected, and equipped on an imposing scale at Stuttgart, where a new electro-technical school has been added to the Royal Technical High School. At Darmstadt similar provision is made. It is not only in the domain of science, however, that great progress is being made in Germany and Austria. In almost every town visited, fine industrial art museums were found, arranged with the express purpose of cultivating a knowledge of what has already been accomplished in the production of color, design and workmanship. Every technical school has its museum of objects applicable to its special purposes. Notably was this the case in Berlin, Vienna, Crefeld and Dusseldorf. At Nuremburg there has recently been erected at a cost of £50,000, an industrial and trade museum, known as the Bavarian Museum, possessing an excellent collection of art and technical books, besides which there are regularly filed, and accessible to inquirers, more than 130 journals relating to art and industry, together with trade catalogues, directories and address books of other countries. The officials are ready to give every assistance to designers, merchants, and manufacturers seeking information in any department of industrial art or manufacture. The inspection of the school of art in the same city leads the deputation to remark that throughout Germany the supply of teachers of the highest class is on a scale of liberality of which we, in England, have no idea or example.

The Manchester report, being the product of the close observation of business men, deserves all the attention our countrymen can give it. At the last monthly sitting of the Bradford Chamber of Commerce, commercial education was the principal topic discussed. An important memorial to the Government was adopted on this new subject. This memorial has been prepared by the Bradford Chamber, but really formulated on behalf of the Associated Chambers of Commerce of all England, in accordance with a resolution passed at the annual meeting of the Associated Chambers, held at Middlesborough, in September last. This memorial was proposed by the Bradford Chamber of Commerce, and seconded by the London Chamber, and just to show how the country is waking up to the importance of technical education and commercial education, the memorial says:

"That, in the opinion of this association, it is desirable that young persons intended for commercial careers should, besides passing through the ordinary curriculum of a secondary school, be specially instructed in subjects appertaining to commerce, and that, in order to encourage the provision of such instruction, and with a view to securing that the facilities for commercial education in the United Kingdom shall not be inferior to those of any continental country, it is urgently necessary that government aid should be extended to the teaching of commercial subjects, as it is now to the teaching of science and art; and that a memorial to this effect be addressed to the Prime Minister, and that copies thereof be submitted to the Chancellor of the Exchequer and the President and Vice-President of the Committee of Council on Education." The memorial goes on to say: "Your memorialists would respectfully submit that the aid hitherto granted by the government through the science and art department reaches only one of the two classes into which the trading community may be divided. These two classes are:—1.

Those who produce raw or manufactured goods—that is, the industrial class; 2. Those who buy and sell such goods that is, the mercantile class. That for the training of Class 1 (viz., persons engaged, say, for example (*a*) in growing wool, and (*b*) in spinning it into yarn and weaving it into cloth), the government provides grants through science and art schools and classes, and in other ways; while for the training of Class 2 (viz., those, for example, engaged in buying and selling or importing and exporting wool and woolen cloths), no grants are made by government. That, without presuming to lay down an exhaustive scheme of commercial education, your memorialists would respectfully submit that in any list of aided commercial subjects the following should be scheduled: 1. A clear and distinct handwriting. 2. Arithmetic and mathematics, including exchanges, foreign currencies, and the metric system. 3. Commercial correspondence, precis writing, handwriting, English composition. 4. Commercial and industrial geography. 5. Commercial and industrial history. 6. Study of the products of the animal, mineral and vegetable worlds, and their connection with British industries. 7. Study of the principal British industries, coal, woolen, cotton, iron, steel, leather, etc., including the commercial aspect of practical geology, mineralogy, botany, zoology, with laboratory during the last few years. 8. Modern languages (a) of continental nations, *e. g.*, French, German, Italian, Spanish, etc.; (b) of eastern nations. 9. Commercial book-keeping. 10. Modern business methods of conducting operations incidental to home, import, and export trade. 11. Principles of commerce. *i. e.*, Commercial science. 12. Shorthand. 13. Typewriting. 14. Principles of commercial law. 15. Political economy. 16. General accountancy and auditing. 17. Principles of banking and financial science. 18. Principles of economics and statistics. 19. Insurance—fire, life and marine.

## LOSS OF POWER IN FACTORIES.

There have been made at various times experiments on the loss of power during transmission from the engine to the machine, but nothing, so far as we have been able to observe in previous experiments, will compare in completeness with those of Messrs. McAlister and Morley, made under the direction of C. H. Benjamin, at the Case School of Applied Science, and described in a paper read by that gentleman before the American Society of Mechanical Engineers. Observations were carried out in sixteen different establishments, the general routine of observation being as follows:—

Indicator cards were taken from the engine at intervals of one hour during the day, while the factory was in full operation. During dinner hour, or after stopping in the evening, diagrams were taken of the power required to drive the line and counter-shafting without the machines. The averages of these cards were used to show respectively the total and the friction horse-power of the factories. The length, diameter and speed of rotation of the line shafts were noted, also the number and length of bearings and the method of oiling; the number and width of belts running from line shafts and average diameter pulleys, the number of counter-shafts, the actual number of men at work. The results of all these observations were resumed in four tables, which to the owner, the manager, and the designer of factories, must prove of immense value and interest. Who among the managers of Indian mills can give a correct account of what becomes of the power produced by the engine, and is able to say that the friction card of his shafting is the best possible? The speed of shafting in the factories under observation ranges from 114 to 200 revolutions per minute, the width of belts from three to six inches, and the horse-power transmitted per belt from 2.40 to .084.

The percentage of total indicated horse-power required to drive the shafting and belts varies from 80.7 in a factory for building bridges to 14.5 per cent. in a steel wood-screw factory occupying 140 men. The average percentage of friction is 62.5. It was found that in the bridge factory the machines were so widely distributed as to suggest the advantage of electrical transmission. The shafting of the wood-screw factory was found to be in perfect alignment and hung in cast-iron boxes without babbitt linings. The oiling was done by hand. That the range of horse-power lost in transmission should vary by 66.2 per cent. between the worst and the best example of shafting, shows how much the subject is neglected, even in a country remarkable for the enterprise and intelligence of its people. One of the managers whose works were visited discovered after the experiments were made that one of his shafts was about three inches out of line! The examination and adjustment of shafting is a duty that is much neglected in factories, and the loss of power due to their defective alignment is no doubt frequently charged to some other cause than the true one. When systemized, the testing of shafting for resistance is a very easy matter. It may be done by throwing off all belts and driving ropes, and attaching a wooden lever against the side of the driving pulley. This lever may be six or any less number of feet in length, it should cross the shaft and have on the far end a balance weight to put it in equilibrium. A spring balance attached to this lever will measure the pull required to put it in movement. This pull, together with the distance from the centre of the shaft to the spring balance, should be entered in a book and compared with the best reading taken soon after the shaft had been adjusted. When the pull exceeds a reasonable margin beyond the standard resistance, the bearings require an overhaul.

The subject, however, does not rest here. The loss of power due to friction in spinning machinery caused by the hundreds of rubbing surfaces is equal in many cases to two-thirds of the power delivered to the machine; this loss is beyond the control of the indicator, and comes within the domain of the dynamometer. It is very common to estimate the friction of shafting at 25 per cent. of the total indicated power, but in many mills this figure must be greatly exceeded—mills where the frequent breakage of tin rollers indicates a constant error of alignment of the frames.

The work of Mr. C. H. Benjamin is of a class almost unknown in India, where everyone would like all the work of research or experiment to be done by his neighbor. It is a valuable contribution to the economics of factory management, which is certain to initiate many useful reforms.

## TEXTILE ORNAMENTATION.*

(Continued from Last Issue).

It was at Babylon where were produced those magnificent and marvellous coverings for the couches set apart for the guests at the great banquets, and which are said to have cost thirty-two thousand pounds sterling. The Babylonians were also very skillful in weaving large designs of many colors, their cloths were very rich, woven with figures of animals, fishes, and birds; sporting subjects also ornamented their fabrics, as hunting, fishing and shooting. Their brocade included those subjects for design. The colors mostly used included scarlet, blue and purple, enriched by gold and silver threads. Silk seems to have been for a very long time the monopoly of China (some writers say the exclusive monopoly of the Chinese), until the second or third century before the Christian era, and it is very difficult to say exactly when it first found its way from China to Egypt. In the books of Ezekiel and Proverbs we hear of this precious thread, but there is much doubt as to the translation of the Hebrew word when used: some historians affirm that silk was unknown to the Israelites. It is nevertheless true, that the Egyptians had some knowledge of a thread very much like silk, procured from certain worms, which they span and manufactured into a material of a very thin and transparent character, and of a very silky appearance, but said to be of an unsubstantial nature. It is natural for us to come to the conclusion that each country or people would use such materials as were obtainable by them, and we find that wherever civilization has found a footing, the people have shown traces of ornamenting textile fabrics made from such materials as their country produced. In the absence of silk (which had not found its way into Egypt until the second or third century before our era), cotton, linen, flax and wool, with gold and silver thread interwoven, sufficed the Egyptians in the manufacture of their textile goods. We gain some idea of the quality of the fabric and of the skill of the Egyptian workman, by examining the piece of mummy cloth exhibited in the British museum, sent to England by Mr. Salt. It is a piece of linen made from a thread, one hundred hanks to the pound or eighty-four thousand yards in one pound avoirdupois weight, one hundred and forty threads per inch in the warp and sixty-four picks per inch in the weft. In his "Handbook of Textile Arts," at the South Kensington museum, the Very Rev. Daniel Rock, D.D., tells us of a cloth or piece of linen obtained at Thebes, which was one hundred and fifty-two threads per inch in the warp, and seventy-one picks per inch in the weft. We read in Exodus of the very extensive use of gold thread or wire and twisted linen: also of the workmanship and manipulation in making the gold thread: "And they did beat the gold into thin plates and cut it into wires, to work it in the blue, and in the purple, and in the scarlet, and in the fine linen, with cunning work" (Exodus xxxix., 3), thus giving us their ideas in the perfection of color, and leaving us to imagine that their "cunning work" was the result of superior skill and of great ingenuity.

The inspired Psalmist, speaking of the king's daughter, says: "Her clothing is of wrought gold, and she shall be brought unto the king in raiment of needlework" (Psalm xiv., 13, 14). Herodotus, speaking of Egyptian workmanship, tells of a piece of linen which was especially to be admired, as each twisted thread contained no fewer than three hundred and sixty strands, and upon it were interwoven vast numbers of figures of animals. From these extracts we may be assured that when they could card and spin cotton, linen and flax to such a high degree of perfection, the fabrics produced from these fibers must have been beautiful, and therefore they could well afford to dispense with the silk. The Egyptians were satisfied with the products of their own soil, along with cotton imported from India, which was manufactured into textiles. They were most famous for striped cloth, figured fabrics, plushes and velveteens, and for their curious fabrics, specimens of which are to be seen in many of the public museums. It is very evident from the Book of Exodus that needlework and embroidery were the chief methods adopted for ornamenting woven goods amongst the Jews, but the word embroidery may in some instances refer to weaving, and not always to the work of the needle. Egyptian tapestry was ornamented with paintings as well as embroidery. We read in the Book of Proverbs (vii., 16), "I have decked my bed with tapestry, with carved works, with fine linen of Egypt." Dr. Rock, in his work on "Textile Fabrics," renders the text, "I have woven my bed with cords, I have covered it with painted tapestry from Egypt." Thus we find that linen was not only used as household furniture amongst the Israelites, but that it was really manufactured in Egypt. It may here be asked, "How was it that the Egyptians did not avail themselves of the valuable discovery of silk, which, according to Chinese historians, was in existence upwards of three thousand years before our era?" We may answer in the first instance, as previously stated, that probably the Egyptians were content with their own productions, namely, linen, flax, and wool. When the Jews were emigrating from Egypt, whence they procured their costly materials, they had no silk included in their valuables, nor do they seem to have knowledge of any fabric, except linen, cotton and woolen. Secondly, it may have been owing to the very jealous disposition of the Chinese people, and to their desire to keep the monopoly of the manufacture to themselves, for at last when the silk worms were brought to the West, they were carried from the country by stealth; or it was because they shut themselves up from all communication with the West, so that if silk had been manufactured in quantities large enough for exportation, it would have found no outlet for exportation to other countries. The Chinese are a very suspicious people: if they had any project advanced to them by a foreigner, which ought to be to their mutual advantage, they would cheat the foreigner out of it if they could, but will not generally accept any foreign innovation which would prove a benefit to both parties. We must give them credit for being exact, but of small ideas; they are industrious, but conservative in their notions and habits, hence, the great similarity between their designs for textiles of some thousands of years ago and those of the present day. We must now return to their remarkable manufacture of silk, which they undoubtedly kept to themselves so very many centuries. Aristotle is the first Greek author who mentions the valuable insect, the silk worm. He states that silk was first woven on a small island in the Grecian Archipelago, named Cos, the modern name of which is Stanco. At this place, the ancient writer tells us of Pamphile, the daughter of Platos, who was the first one to weave silk.

(To be Continued.)

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## SOUTH OF SCOTLAND TWEEDS.

The woolen industry of Great Britain, says the *Textile Mercury*, is usually spoken of as being centered in Yorkshire, which is, no doubt, true. The magnitude of the transactions carried on in the West Riding finds no parallel in other parts of the country, and it is on the eastern slopes of the Pennines that the strength of the woolen and worsted industries lies. It is, however, also true that in other quarters of the kingdom these industries in the aggregate are of very respectable proportions, and as far as the quality of their productions is con

cerned they are in the front rank. An interesting article on the Scotch tweed industry appeared recently in the *People's Journal*. "Between two and three years ago, says the writer, "the manufacturers on Tweedside began to experience keen competition from many quarters, and since then the trade as a general rule, has gone from bad to worse, although several firms have not been affected to any great extent. Labor is now plentiful, money is scarce, and privation was prevalent last winter, and may be again this one. Glancing at the general features of the industry, it has first to be noted that the border trade is what is known as 'high class.' 'Shoddy' is eschewed. The reputation of Border cloth has been built up through the use of first-rate material, and there appears to be a feeling that the district must stand or fall by that quality. The principal wools used are Cheviot, Australian, New Zealand, River Plate, and the English Down. Most of the manufacturers spin their own yarns although several, in addition to those who carry on the worsted industry, purchase their yarn in the markets. The finished article is generally sold in London, Manchester, Glasgow, Huddersfield, Leeds, and other large towns, while a considerable quantity is dispatched to the Continent and to America. In some respects it is an old-fashioned trade. For instance, several firms have few travellers. These mills supply certain merchants who deal in the high-priced qualities of cloths, and these merchants, on the other hand, refuse to accept goods from other mills, although the cloth may be cheaper. Of course, the merchants know that they are receiving a high-class article, and the manufacturers are aware that if their goods do not come up to the requirements further orders will be refused.

It is such manufacturing firms that have not experienced the depression, but it is said that one or two are now considering the advisability of running their mills on short time. Galashiels is the town that has suffered most from this dullness. It has nothing to fall back upon, as hosiery forms a very small trade. Hawick, however, has not been content with one industry, and has developed the hosiery branch so extensively that the depression in tweeds is not so apparent. In fact the hosiery is a wonderfully steady trade, ready markets being secured all over the country. Selkirk, again, is practically given over to the manufacture of tweeds; and, strange to say, it is almost the only town on the borders that is progressing. The reason for this is difficult to find. The town has a most delightful situation, and feus can be easily secured; but these two factors do not altogether explain the prosperity, although one Galashiels firm moved to Selkirk because better ground could be had there. It is contended by some, however, that the Selkirk and Hawick manufacturers are not so conservative as their Galashiels friends, and, moving with the times, have introduced specialties that have kept them busy during the two years of slackness.

Every one on the borders has his own theory regarding the cause of the depression. The popular fancy is that fashion has changed, and that fact cannot be gainsaid. Scotch cloth does not make up so neatly as some of the English, and especially Yorkshire fabrics, which are now being largely adopted by merchants and tailors, and taste is also running upon plain goods. Cheviot cloth is soft, and the demand is for a crimpier fabric, which can be produced much better from English Down wool. Then, again, it cannot be denied that ready-made clothes are more popular now than they have ever been, and this likewise affects the Tweedside industry. Foreign competition is also telling against the prosperity of the border towns. Until recently a very large business was carried on with the Continent and with America, but the European countries and America are now supplying their own requirements to a large extent. On the Continent the border methods are now being used, a considerable number of Germans having been trained in the mills on Tweedside during recent years. It is also said that a mistake has been made through several of the manufacturers endeavoring to compete with England and lowering the quality of the cloth, and several well-informed critics assert that in a large measure the present depression is solely due to over-production. New and powerful machinery, they point out, has been introduced, capable of turning out 25 per cent. more work than the looms could produce some years ago, and the demand has not increased in proportion. These are a few of the causes which are said to have brought about this serious and regrettable depression.

Why, some may ask, do not the Border manufacturers change their methods? The answer is obvious. The English worsted goods cannot be manufactured with the machinery in the Border mills. A well-known British commercial gentleman not long ago declared that he found it cheaper to sell all the machinery—good though it was—in his establishment and replace it with a new set, because several improvements had been adopted by his neighbors. Perhaps the same course might be profitably followed in some departments on the Border, but it is to be feared that even then manufacturers would be at a disadvantage in certain quarters. "Tell us the true cause of the depression," say the mill-owners, "and we will then do our best to remedy the deplorable state of affairs." At the same time they hold strongly to the belief that the real cause is a temporary change of fashion, which will soon change again in favor of the Border tweeds. Several of them also contend that the two-loom system which holds in Yorkshire, but to which the Scottish operatives strongly object, will have to be introduced. The prospects for the coming winter are not bright. Wages are being reduced in some quarters, the workers are being put on short time in others, and it is said that a Galashiels factory will be closed in a few weeks. Females earn higher wages than men, women are employed in the mills, while many men go idle. A change for the better would be welcome to the 16,000 persons employed in the trade.

## SOUTHERN COTTONS.

BY J. E. MACGOWAN.

The cotton textile trade of the Southern States is one of the most interesting in the history of the country's industrial development. It began during the last ten years of the first half of the century. In 1850 the mills were of some account, in those days, commercially speaking. A few of these—they were small even for that time—were operated with slave labor, and results were satisfactory. In the decade, 1850-1860, there were some large mills built, the most conspicuous of these being the Eagle and Phoenix, at Columbus, Ga., and the Augusta mill, at Augusta, in the same State. Two of lesser size, but large for that era, were in Aiken County, S.C. Few, perhaps none, of the mills were destroyed during the civil war. They were all in fair condition, and, with trifling repairs, made ready to start up. Spinning cotton was naturally, therefore, the only one of the small industries then in the South to be promptly revived after the close of hostilities. Considerable additions were made to the spindle and loom capacity in the last five years preceding the taking of the eighth census, 1870. In that year the census statistical agents found in the South 147 big and little cotton mills, that contained 283,800 spindles; 6,310 looms, and consumed yearly 80,300 bales of cotton. The largest mills were still in Georgia. That State's spindles numbered 85,000, and these were all active. They then consumed about half of all the cotton spun in the South. In the decade, 1870-1880, the progress was only moderate. In 1880 the census returns show a total of 164 mills, 561,300 spindles, 12,329 looms; cotton consumed in the census year, 189,000 bales.

The most unerring indices to progress in a cotton textile trade, are the increase of spindles and the fining of yarns spun. Since 1880 the Southern spindles have increased 570 per cent.

The average number of yarn spun in 1880 was 13, and it was 17 3-4 in 1896-7. North Carolina's average is No. 20; South Carolina, No. 19. Both States spin as high as No. 42. When the average was 13, sixteen years ago, there were no mills that produced yarns above No. 20. Now there are large mills devoted to the production of print cloths and other fine goods. The tendency toward finer fabrics in the Southern mills is decidedly strong, as is shown by the character of spindles generally placed in the new mills. The table below gives in compact form the movement of the trade in the six cotton years ended Sept. 1, 1897 :

| Year. | No. of Mills. | Spindles. | Looms. | Bales Consumed. |
|---|---|---|---|---|
| 1891-2 | 293 | 1,938,524 | 40,608 | 681,471 |
| 1892-3 | 314 | 2,082,197 | 46,297 | 733,701 |
| 1893-4 | 321 | 2,167,242 | 52,195 | 723,329 |
| 1894-5 | 322 | 2,379,281 | 55,390 | 853,352 |
| 1895-6 | 352 | 2,770,284 | 70,010 | 915,810 |
| 1896-7 | 375 | 3,456,537 | 82,873 | 1,024,482 |

The number of mills built in the six years was 82, the number of spindles added was 1,441,498, an average of 17,500 for each mill. North Carolina has built 42 mills since 1890, and increased the number of her spindles by 433,321. South Carolina's mills are larger than those in any other State. She has 64. They operated 994,740 spindles in the last cotton year, which is 17,000 to the mill, average The following table exhibits the cotton trade of the three leading Southern States for the year ended Aug. 31, 1897 :

| | Mills. | Spindles. | Looms. | Bales Consumed. |
|---|---|---|---|---|
| South Carolina | 64 | 994,740 | 28,144 | 320,058 |
| North Carolina | 147 | 852,221 | 19,164 | 267,615 |
| Georgia | 67 | 677,825 | 19,041 | 225,506 |

The following summary will show the state of the trade in ten Southern States at the three census periods, since the civil war :

| | |
|---|---|
| **1870.** | |
| Capital invested | $11,077,665 |
| Wages paid | 1,929,899 |
| Value of product | 7,519,010 |
| Average number of hands employed | 9,927 |
| **1880.** | |
| Capital invested | $17,375,797 |
| Wages paid | 2,751,286 |
| Value of product | 16,356,598 |
| Average number of hands employed | 16,940 |
| **1890.** | |
| Capital invested | $52,131,421 |
| Wages paid | 7,958,310 |
| Value of product | 31,167,065 |
| Average number of hands employed | 37,813 |

These totals have been doubled since the census year 1890, as to all of them, and more than doubled as to some. Those who ought to be well informed, say the item of capital is now $120,000,000; but a safer estimate is derived from the increase of spindles, which was just raised 100 per cent. Making allowance for the finer spindles added since 1890, $108,000,000 capital, now in the active mills, would probably be a close approximation. This from $17,000,000 in 1880 is quite as fast growth as we ought to desire. The knitting mills of the South have been practically all added to the trade since 1890, and there are no statistics of that branch. They are quite an item, the number having much increased in the past five years. Some comparisons of Northern with Southern progress in the cotton trade ought to be interesting. The statements below give the takings of mills in the two sections for the cotton years noted:

| | Bales. |
|---|---|
| 1890-91—Northern mills | 2,031,625 |
| 1896-97—Northern mills | 1,862,565 |
| Loss | 169,060 |
| 1890-91—Southern mills | 605,916 |
| 1896-97—Southern mills | 1,024,482 |
| Gain | 418,566 |

The statement following gives the number of spindles in each section in the first and last years of the current decade :

| | |
|---|---|
| 1890-91—Northern mills | 12,925,000 |
| 1896-97—Northern mills | 13,900,000 |
| Gain | 975,000 |
| 1890-91—Southern mills | 1,756,047 |
| 1896-97—Southern mills | 3,456,537 |
| Gain | 1,700,490 |

The Northern gain of spindles was 9 per cent. in seven years.

The gain of spindles South was 100 per cent. in the same period.

In the year 1896 the net gain of spindles North was a round 100,000; South, 427,000, and here it should be said that since 1890 the Southern cotton trade has been reinforced by about 250,000 spindles, placed by Eastern corporations in this section. The Dwight Company, of Lowell, built a big mill near Gadsden, Ala., in 1891-92, for the manufacture of that company's brand of heavy domestics, in which there was a "good will" the corporation could not afford to lose, and could not afford to make the goods profitably in Lowell. The new mill cost $600,000, and operates 40,000 spindles. Others of the New England cotton corporations have mills in the South, and still others have taken stock in new Southern mills in the last few years. Essentially all the Eastern and Middle States money in the Southern cotton trade has been placed since 1891. And these New England and Pennsylvania ventures in the South were made for the same reason the Dwight Company moved its manuacture of heavy cottons to the cotton fields. It was a stroke of economy; the manufacturing is done enough cheaper in the South to justify a diversion of the business of the owners. In some cases the machinery for making heavy fabrics has been moved to the new Southern mill, and its old place has been taken by spindles and looms for making finer goods. Alabama, Georgia, and the Carolinas received practically all of the Eastern capital. By far the largest part of the new mills built since Eastern spinners became actively interested in the Southern cotton trade, are Southern properties, projected by Southern men, built with Southern money, and operated by Southern managers. I believe that in 1890 there was not a bleachery in the South. There are several now. Before that year all goods were sent to New York or New England to be finished. In a year or two the South will have sufficient finishing capacity to handle all Southern-made goods. The Southern mills excel in colored goods, cotton toweling, blankets, etc. Of these kinds great variety is produced, one great mill in Mississippi, the Wesson, making 125 patterns of stripes and checks, grading from fine ginghams to heavy denims for men's wear.

The popularity of the trade among the people may be illustrated by relating one of the methods adopted for securing a mill or mills in some of the Southern towns. It is called the "co-operation plan." Some leading men of the town consult, calculate on the amount of money possible to be raised, the size and cost of the plant, and kind of goods to be made; subscriptions are solicited among both the townspeople and farmers, the shares subscribed for to be paid—a fixed sum on each share—in monthly installments. When an agreed amount has been secured, a charter is obtained, the company is organized, and the payments begin. With sufficient cash and material in hand, the Building Committee go to work When the buildings are finished there is enough money in the treasury to make a payment on the machinery already ordered. The process is a trifle longer than a company goes through which

begins with the money in hand, but this popular plan has built a good many of the best, most profitable properties in the South, and it has advantages. The entire "live" element in the community is financially interested, and the enthusiasm is reasonably sure to be kept alive until the mill is finished and started. Then the smallest holders gradually sell their stock to those of larger means. While the holdings remain sufficiently diffused among the people, the company is rid of the disadvantage of unwieldiness that a too great number of owners would entail. All the mills built by this plan have proved successful. The Piedmont region is the favorite quarter for locating cotton mills in the South. It (as the name indicates) covers the eastern foot of the Appalachian range, from Virginia, in a south-westerly direction, to Middle Georgia. The advantages claimed for this country are several: Abundance of water power and transportation, convenience to both coal and cotton; the proper moisture in the atmosphere required to facilitate cotton manipulation. The prevailing south-east breezes from March to December, and the north-west current from December to March produce the right amount of moisture held in solution, and artificial moisture is not needed in the spinning and carding rooms. However well these claims may be founded, it is certain that on this strip of the mountains foot are located 80 per cent. of the most profitable cotton mills in the South.

## Foreign Textile Centres

MANCHESTER.—The aspect of affairs in the cotton trade naturally has commanded general attention locally. Early in the dispute in the cotton trade the joint committee of the various Employers' Associations met the operatives' representatives, and formally presented their demand for a 5 per cent. reduction in wages. A week was suggested for a reply, but this being considered inadequate by the men's leaders, a fortnight was granted for the purpose of obtaining the answer of the workers to the proposition. There is, of course, considerable speculation as to the probable nature of the response. The men have always resisted reductions, on the economic ground that buyers eventually obtain the full benefit, leaving producers in as poor a plight as before. Possibly the arguments which will be brought forward by the masters may induce them to accept a compromise, although this is very uncertain. On the other hand, one finds on 'Change, that the position from the spinners' standpoint, has been greatly altered during the past few days. Orders have been very freely placed, with the result that some firms are assured of an outlet for their production until the end of the year. This, it is assumed, will rather reduce the strength of the demand for a wage reduction. "Absurd," again say others: "for in a few months the trade will be in as bad a state as ever. Better by all means, therefore, go on with the fight now we have commenced." In other quarters, as, for instance, amongst shippers, talk about the probability of a strike produces an incredulous smile. "Spinners," one is informed, "have got what they want already. They have frightened consumers of yarns into anticipating their wants, and the demand that has set in, owing to the fear of a strike, completely alters the position of affairs. Recent events simply represent the bull tactics of the Stock Exchange applied to the trade in cotton yarns." Retailers, and there are unfortunately thousands of them, who look upon the threatened dispute in the cotton trade as one virtually affecting their own interests, must look out for themselves from the conflicting views what they consider the correct one. The fact is, that opinions are nowhere more divergent than on the boards of Exchange itself, the buyer naturally expressing views opposite to those of the seller, although he may not be sincere in what he says. It is certainly true that there has been no general improvement in the condition of the great foreign markets upon which the staple trade of Lancashire principally depends. Calcutta and Bombay took fair shipments from Liverpool last week—say, roughly, 33 million yards in all—but there is still insufficient employment for all looms. Still, adding Kurrachee and Madras takings (about ten million yards), it must be admitted that the Indian trade recently was not bad. Standard and well-known grey cloths have been more particularly enquired for in the Bombay market. The latter part of September is generally dull in Bombay, and the recent increase in shipments is the usual recovery from the quietness of that month. Prospects in the agricultural districts were generally satisfactory when the mail left. The heavier makes of jaconets for bleaching are in moderate demand. Dhooties are rather quiet. For the home trade purchases are at a lower level, merchants being indisposed to increase their holdings in view of the unsatisfactory labor outlook. The wholesale houses, largely for reasons which are explained above, have been rather quiet, and complaints appear to be general. It is beyond doubt that the throwing out of employment of so many thousands of skilled workmen, usually earning good wages, has had a serious effect on drapery sales in many parts of the country.

LEEDS.—Representatives of shipping houses formed the greater portion of the attendance at recent markets, and were more eager to secure parcels of heavy overcoatings and suitings at the same rates as were current this time last year than has been the case for some time past. As regards ordinary cloths of this description, they were able to satisfy their requirements, the bulk going to France and Italy. Higher grades of winter specialties did not attract their attention to any great extent, but this did not affect rates, which, for superior naps, beavers, presidents, and reversibles, remain firm, at the somewhat improved quotations established at the beginning of the season. Home buyers have operated sparingly. As regards South America, a little more is doing on Brazilian account, and Argentina is also looking up a little. Union worsteds, printed meltons, and vicuna serges are receiving some attention from China and Japan, and advices lead to an expectation of an extension and repetition of orders in these goods, and also the better kinds of fabrics. Miscellaneous sales have been varied, but not large. Covert coatings are in good request at late rates. Prices of blankets and rugs show no change.

BRADFORD.—Although the recently completed series of colonial wool sales in London maintained a firm tone to the end, and special lots of the finest wools commanded fully as much money as at any time during the sales, and Bradford buyers had probably barely secured their usual share of these wools, the market here has since then shown no evidence of any excitement, and the tone of business here may be described as firm, but quiet. There is, however, no alteration in the situation as recently described, as the shortage in the production of the finest classes of Australian wool is becoming every day more evident, and with the probability of the United States becoming a freer purchaser at an early date, and the prospect of an improved demand on both home and Continental account, everything points in the direction of the upward tendency in the prices of these fine wools which has been foreshadowed in this journal for some months past. The finer classes of cross-bred wools are sharing in the improvement noted above in the pure merino wools, and even the coarser classes of cross-bred wools are wonderfully firm in face of the poor demand for the lower classes of braid yarns and the stoppage in the American demand for the cheaper classes of worsted coatings, in both of which trades, in the normal state of trade, very large quantities of the coarser kinds of cross-bred wools are consumed. In English wools there appears to be very little movement of importance, except a better enquiry for the very brightest lustre wool, which is probably wanted for mixing with some of the cheaper classes of mohair for braid pur-

poses, and there is also all the time a steady trade doing in bright Irish wools for the colored yarn trade, in which spinners are busy on both home and foreign account, supplying the wants of the makers of fancy dress goods. The further rise in the price of raw mohair, and also in mohair yarns, which was foreshadowed, is now an accomplished fact. They are not likely to be forced from this position for some time to come, as the production of the best classes of mohair (which alone are usable in the Bradford trade), is not increasing, and the market was cleared of all accumulations of stock last year. Users of braid now appear able to give the necessary price for either silk or mohair braids, and as there seems to be a good time for braids in prospect, and the production of mohair braid yarns is confined to Bradford, the position of spinners is strong, even if it were not assisted by the increase in the use of mohair yarns in the production of dress fabrics. This demand for bright effects in dress goods continues to be well sustained, and high-class black fancy dress fabrics of the "Applique" or "Crepon" order, are to-day very good property, as also are an infinite variety of colored fancy styles which owe their brightness to either silk mohair, or the newly-introduced "Mercerized" cotton. Plain alpacas, in very good qualities, are also being bought for the next spring trade, both for the home, Continental, and American markets, and I hear also that in the last week or two some fair orders for expensive mohair and alpaca lining twills have come to hand for the latter market; and until these goods are made more successfully on the other side, even the fearfully high duties at present in force will hardly keep them out of that country. In worsted coatings some business is offering on American account, but the limits are as yet too low for much of it to be got through. In the general home trade the demand for dress goods is still quiet, being no doubt influenced by the reaction following the Jubilee expenditure and the disturbance of the labor market; but the demand for some special articles, such as tartan checks for present wear, lace effects for the coming spring, is far ahead of the production. Since the tailor-made coats and skirts came to be generally worn by the million, some of the Leeds and Morley manufacturers, who had prepared themselves for this trade, have had a good innings, and the best makers of these mixture costume cloths are still very well employed.

HALIFAX.—The following is the trade report of the Halifax Chamber of Commerce for October: Cotton Yarns.—In bundle yarns there is nothing fresh to add to last month's report; most counts are pretty well sold. Prices steadier. The demand for warps keep very good. The fustian weaving and clothing houses of Hebden Bridge continue fairly well employed. Wool.—Business during the month has been very slow and dragging, with a slightly easier tendency in prices, although the volume of trade is almost too small to afford a trial of quotations. Carpets.—We are still unable to give a satisfactory report, though we are pleased to notice signs of a recovery from the depression through which the trade has recently passed. Spun Silk.—Raw material has advanced from 5 to 7½ per cent. with still a firm tendency but as yet it is difficult to realize any advance on yarns, for which, however, the demand is slowly improving. Pieces.—Quietness still prevails among manufacturers of all classes of fabrics, although merchants are making low offers which cannot be accepted, owing to the firmness of spinners in their quotations for new orders. There is much machinery standing. Worsted Yarns.—Worsted spinners are still laboring under great disadvantage, spinning instructions are coming to hand slowly, and at prices quite out of proportion to that of the raw material, especially merino qualities.

ROCHDALE.—A quiet feeling pervades the flannel market, and although orders are daily coming to hand, they are only for small lots. There is some curtailment of production by some manufacturers, but prices keep firm, as they cannot obtain any relief in the price of the raw material.

KIDDERMINSTER.—There is no change to report in the carpet branch, and not much is looked for just at present. Some few buyers have visited the market, and their doings and reports are decidedly encouraging. The yarn trade is disappointing as regards delivery, and firm in price. The low level of the price of carpet yarn is, however, a false one, and bears no proportion to the price of wools. Spinners, therefore, are careful how far they go, and are inclined to see if they cannot put their machinery and wool to a more profitable use than taking contracts for carpet yarns at present rates.

NOTTINGHAM.—Business in the fancy millinery department of our lace trade is not brisk, and as a consequence, a considerable amount of machinery has become idle. Some of the best novelties in Valenciennes and imitations of real lace are having a fair amount of success, but production of these even is limited, the goods being for the best centers of fashion. Heavy cotton laces, from curtain machines, in white, butter, and cream, are selling in good quantities. Prices, however, are low, and they afford but little profitable employment for finishers. Plain and chenille veilings are also depressed, and the possible supply largely exceeds the actual demand, leading to unhealthy competition. There is a moderate demand for silk and cotton tulles for millinery purposes, orders are restricted, and prices are high. Rice and other stiff foundation nets are selling slowly, but there is no decline in values, as the production is restricted to bona-fide orders. Bobbinets, light tulles, and all heavy nets for embroidery purposes are firm in value. The production continues to fall below the actual demand for leading qualities. Some shipping orders have been placed for crochet, American, and warp laces, at long discounts. Caps, collarettes, and other fancy goods are in moderate demand. The lace curtain and window blind departments, on the other hand, have become dull again. There is a large output of goods—curtains, furniture lace, antis, and special articles in white, ecru and colors—but the demand is far below what is necessary to keep the machinery fully employed. A pretty ruffle of spotted net is being shown at the leading millinery establishments. It is to be had in black or in white, and the edges of the net are outlined with narrow gathered satin ribbon. The ribbon must be gathered in the centre and sewn like a ruche to the edge of the net, and the ruffle should be then mounted on a strip of spotted net. Nets of all kinds promise to be popular this winter, and for dancing gowns, where economy must be considered, very coarse white net with little frills of satin ribbon, headed by some fancy edge, has much to commend it. High-necked bodices of black lace jetted are bidding for favor. Jetted or jewelled lace goes well with pouched bodices. The value of our exports of cotton lace during last month was £188,671, making £1,738,238 for the nine months, against £1,578,123 for the same period of 1896, and £1,521,143 for the same period of 1895. Cotton hosiery of all sorts was valued at £32,347, making £277,629 for the nine months, compared with £354,533 last year, and £312,217 in 1895. Of woolen hosiery we shipped abroad last month goods worth £83,043, which brings the year's total to £659,244, against £674,392 and £641,037 for the nine months of 1896 and 1895, respectively.

LEICESTER.—The hosiery trade is very partial, and the repeat orders are easily met out of stock. Heavy goods are a very dragging trade, and the turnover will be much under the average for the winter trade. The yarn market is steady, but the deliveries are almost exclusively confined to the completion of old contracts. New business is dragging, and buyers concede the demands of spinners with great reluctance, while prices generally are unsatisfactory. Lambs' wool, cashmere, and fancy yarns are steady.

GLASGOW.—The wool trade has been very steady. Stocks

are comparatively light, even for this early part of the season, and on this account holders are not inclined to press sales so as to reduce prices. Spinners, on the other hand, have been quiet, and are buying sparingly until they see how trade is like to develop. Reports from the manufacturers are to the effect that business continues quiet. Prices of all sorts of wool are without material change.

KIRKCALDY.—In the linen trade business is again rather better, and accounts from the United States are more favorable. Floor cloth and linoleum makers are doing a good trade, as the large quantities of goods sent by rail and boat testify.

DUNDEE.—The jute crop is now believed to be very large. Jute yarn for immediate delivery is still wanted. For forward some contracts are made; prices not reported. Hessians are quiet. The only goods in demand are fine wide cloth. This is not cheaper, and is difficult to buy, as the best makers are all well engaged. Flax yarns are still very quiet. Tows are firm, in consequence of the relatively very high prices of the tow fiber. The unfortunate labor war does infinite mischief in this trade. These yarns are largely used in the home trade, and, of course, when wages are not paid, linen goods, which can be done without, are not bought. There is a fair demand from other markets, however, and makers of linen goods are rather more hopeful. Unfortunately the American tariff begins to be wrought once more in favor of the fine wetspins.

BELFAST.—Our staple market continues firm, business being much on a level. Yarns—Demand keeps quiet, and little doing in any direction at the moment. Values firmly held to be at best points. Cloth—Market for brown goods quotably unchanged. Unions are very firm, with, perhaps, a shade more doing. Tow goods in moderate demand. Damasks are rather more than maintaining recent improvement. Thirty-eight inch power-looms bleaching cloth is changing hands steadily. Finished linens for home consumption are selling in fair quantity to meet current requirements of buyers. Export trade without material change.

LYONS.—The sentiment in this market has not undergone any change, and the situation becomes more gratifying as the season advances. Encouraged by the rising market, numerous buyers have deemed it advisable to take advantage of offers in goods from stock, and have secured lots at comparatively cheap prices. Great stocks have disappeared, and for new goods advanced prices must be paid. The ordering business is satisfactory; it is increasing in volume, and prices are rising, although it is hard to obtain in every case the full advance. Difficulties in this regard are experienced on staple lines, while on novelties prices cannot be controlled. Orders in high-class novelties are still restricted in number, but the employment on fine grades has very much increased, and has led to the renewed and satisfactory activity among the many hand looms in town. Orders for quick delivery can no longer be placed, all branches for the preparation of goods to be made being fully occupied. The dyeing establishments are now working with the full number of hands to meet the existing demand. The prospects for the employment of the weaving population during the winter months are better than they have been for years. In the position of the different staple lines, particularly those produced in the power loom factories, no change has taken place. In the finer grades orders have become more numerous for damas with two and three colors, also glace and moire, for natte with three and four colors, and for broches with ribbed grounds. Better grades in taffetas, plain glace, checked and striped, keep well to the front, together with checked surah and large-sized plaids. Satin duchesse still plays a leading role. Velvets are now in particularly good demand, in rich hand-loom qualities, and also in power-loom grades. They are sought in plain, gauffre, miroir, soleil and plaid effects, with a preference for myrtle, prune, marine, cerise, bluet and mulberry shades. Plain velvet particularly is experiencing a better demand, and larger sales were easier at improved prices. A good demand developed for striped velvets on satin grounds. Fancy velvets also are much sought, and prices for these are very satisfactory. The ribbon trade continues to be very good; satin and failles and also rich fancies for sashes are in request. The narrow velvet ribbons sell well, while the wider ones showed less activity.

CREFELD.—The position of the silk industry here remains very satisfactory. The wholesale houses are doing a good business, and orders by mail and from salesmen on the road are plentiful. The advancing prices have stimulated buying, and have induced retailers to lay in larger stocks than they have been accustomed to do of late. The stocks in the hands of the manufacturers are also affected by this buying, and in many grades there is now a scarcity. Velvet stocks are very much reduced. The increased enquiry has also stimulated competition, however, and complaints are heard that prices have in some cases been needlessly cut to secure orders. Profits, therefore, are not what they ought to be, and even in such styles as plaids, which have been scarce all through the season, the profit is not commensurate with the risk which the production of such styles necessarily entails. The mills are in a very good position; orders as well for the present season as for spring, are numerous, and prices, notwithstanding the usual complaints, are improving. There has been some talk regarding a coming fashion for satin duchesse, and it remains to be seen whether the falling off in the orders for damas is due to this cause. The bulk of the large orders is for plaids and black or colored taffetas, but other branches of the mills, particularly necktie silks, are also well provided with work. Umbrella silks, on the other hand, and also ribbons, are no longer in such lively demand. Velvets are selling well from stock, it being too late for advance orders, but some contracts are being received for spring delivery. Among these, orders for black velvets in better grades for the United States deserve to be noted. The request for fancy velvets continues to be regular, and quite a number of looms are kept busy on them. The dyeing establishments here are all working full time, with the full number of hands employed. This refers as well to skein dyeing as to piece dyeing. The silk dyeing is principally for broad silks, while the cotton yarns are almost exclusively for velvets. The piece dyers complain bitterly about the prices, which have sadly fallen since the convention could not be renewed. It is claimed that most of the establishments are working at a loss. The quantity of goods handled by them, however, is very large, and seems to be daily added to. The finishers, on the other hand, are in a more favorable position. Mutual interest has induced them to maintain the rules by which prices are upheld, and they, therefore, profit by the unusual activity of the market.

ZURICH.—There has been a better demand here during the present week, and transactions were more numerous. All grades were in fair request, with an increased demand for Italian trams. Japan silk was too high in price, and therefore figured only for a small part in the deals. The prices for organzine and tram are still below a parity of the cost of greges, and unless they advance more rapidly the spinners will be forced to abandon at least the Asiatic products. The mills are very well situated. We have seen more buyers here during the last four weeks than for a long time during the same short space, and the orders placed have filled our mills up to February, and some for the greater part of March. Plaids are predominating; they have been sampled in a variety of grades from the simple combination of plaid colorings to the more artistic and costly arrangements of different weaves with satin stripes, cariete stripes and lance effects on taffeta grounds.

Jacquard weaves have also been ordered, but not to the same extent as heretofore. Plain goods in black and colors, such as surah, merveilleux, radzimir taffetas, have been ordered in large quantities, and the mills are better provided with work for a long time to come than could have been anticipated some weeks ago. America placed a considerable number of orders during the last fortnight, and although prices were fought most obstinately, the manufacturers succeeded in securing these contracts. The American orders are principally on taffetas in plaids and checks.

MILAN.—Transactions during the present week were less numerous than during the preceding period, as was to be expected after the large quantities which then changed hands. Attention is being called to the fact that nearly all the reelers are without stock in shipping greges, and are sold up for some months to come. Prices for this kind of silk remain at the figures of our last quotations. Weaving greges and organzines, which so far had not followed the price movement to the full extent, gained a fraction during the last few days. The confidence in the future, the good position of the mills, the light stocks and high prices for cocoons—all tend to maintain the present excellent conditions. The demand remains good, and if the transactions show a diminution on account of the high pretensions of holders, it is not these who can be induced to meet the views of buyers. The shortness of this year's silk crop is already beginning to make itself felt, as some grades are scarce, although we hardly passed the first third of the present campaign. The future may bring some surprises when the scarcity becomes more manifest. China and Japan silk are quiet, but stocks in these grades are low, and it has transpired that holders who sold their former purchases have found it impossible to refill their stocks from the producing centres. This may cause a pressing demand later on. The mills seem more anxious now to cover their future requirements. The orders which have been received here are considerable, but present quotations interfere with their being filled. Still the opinion prevails that they must be considered low. The price of cocoons is rising and is now considerably above the price of the silk. The reelers have sold their production for months ahead, and some of the largest are not yet covered to the full extent of their contracts. The supervening advance prevented many of them from laying in the usual quantity at the opening of the season. It now appears that the season for them will turn out unprofitable.

CHEMNITZ.—The manufacturers in Chemnitz are rather busy. In staple goods trade is not quite so lively as it might be, but orders are coming in every day, and in fine gauge goods all machines are occupied up to the first of next year. Prices in those goods are now very firm. In lisle an advance has already taken place, and in Richelieu and Rembrandt ribs wages have gone up, so that these goods can no longer be delivered at old figures. Coarse gauge hosiery, never a very important article for the spring season—meets with less than the usual demand this year, as the tariff is too hard on the low grades, which comprised the bulk of the orders. Embroidered goods are taking very well for next season and in ladies' and men's hosiery, styles with embroidered insteps are readily finding customers, while plain clocks are not much used. The best selling articles to-day are fancy styles, and although boot patterns and stripes of all styles are desirable, none are in such good request as Scotch combinations. In the lower grades they are taken in plain stripes, while in medium-priced goods those with five or six rows of vertical embroidery are used mostly. Green shades are favorites in combination with others. The Scotch plaids containing a good deal of red are not liked so much as the Gordon, Campbell, Johnston, and similar tartans. The cost of fancy hosiery is considerably higher than six weeks ago, but the question of the price is no more important now than the question of delivery. Along this line buyers have the greatest trouble, as no new orders of any extent will be accepted for an earlier delivery than February, and even on orders placed some time ago purchasers will find that the manufacturers have promised more than they will be able to do. Trade in gloves is also fairly good, but the large orders, as in hosiery, are yet to be received. Nevertheless, manufacturers expect a good season, as they believe that the heavy duties levied on lamb gloves under the new tariff will stimulate the trade on fabric gloves with buttons.

## WATER HEATING BY STEAM.

One of the familiar problems in dye-houses and many other industrial establishments is the heating of considerable masses of water from comparatively low temperature to the boiling point; and the simplest and commonest way of accomplishing this end is by passing live steam into the tank which contains the liquid that is to be heated. This operation, in fact, is met with so universally that one would naturally suppose that the principle it involves would be thoroughly understood by every mechanic, and yet we find that such is not the case. It is by no means rare to find such tanks piped up for steam in a way which proves that the piper had no very clear idea of how the thing is done.

In arranging a tank for heating water or other liquids by steam, we have, says *The Locomotive*, two general methods between which to choose. We may discharge the steam directly into the liquid to be heated, by means of a perforated pipe, or we may lay down a coil of pipe in the bottom tank and obtain the desired heat by conduction through the metal of the pipe. The first arrangement is far more frequently met with than the second, probably on account of its greater simplicity. Sometimes, however, it is not permissible or desirable to discharge the steam directly into the contents of the tank—as when working with indigo dyes, for example, and in these cases the second must be adopted. In either case it is of the first importance to have the steam pipes lie along the very bottom of the tank, in order to insure good circulation and a uniform temperature throughout the contents of the tank. We often find such tanks put in with the coils (or the perforated discharge pipe) running around the sides of the tank, just below the surface of the liquid contents; but a single glance at such an arrangement ought to show that it is radically wrong. At all ordinary temperatures water expands upon being heated, and becomes lighter. If the heating pipe is in the bottom of the tank, the water that is in contact with the pipe will grow hot and expand, and will rise toward the surface. An undercurrent of colder water will flow down along the sides of the tank at the same time to take its place; and so the process will continue, the coldest water always sinking to the bottom and coming into contact with the hot pipes that contain the steam, until the entire contents of the tank is heated to the boiling point. Now, if the heating pipes had been placed near the top of the tank instead of at the bottom, the water in contact with them would grow hot and expand, just as before; but being already at the top of the tank, it can rise no further, and the result is that it stays where it is and grows hotter and hotter until it boils, while the main body of the liquid below remains quiescent and almost as cold as it was at first, because there has been nothing to bring it in contact with the steam pipes. That is why it is wrong to put the heating pipes at the top of the tank. Placed at the top, they give no circulation; while if placed at the bottom they produce a good circulation, and the whole tankful of liquid is then heated uniformly and regularly up to the desired temperature. Now, having decided which of the two methods will be best for the purpose in hand, the next question is, how much steam will be required to bring the contents of the tank up to the boiling point? Here, too, we find that mistakes are easily made. It takes a great deal of heat to raise a ton of water up to the boiling point, and pipers very often greatly under estimate the quantity of steam that will be required. A rough rule, which gives pretty good results in general practice, is to allow one pound of steam for every five pounds of the water that is to be heated up to 212°. For most purposes this will be found to be quite sufficient; but as the more accurate process is quite simple we shall give that also.

HEAT GIVEN OUT BY A POUND OF STEAM AT VARIOUS PRESSURES IN CONDENSING INTO A POUND OF WATER AT 212° FAHR.

| Gauge Pressure. | Heat Units. | Gauge Pressure. | Heat Units. | Gauge Pressure. | Heat Units. |
|---|---|---|---|---|---|
| 0 lbs. | 965 | 15 lbs | 976 | 50 lbs | 991 |
| 2 " | 967 | 20 " | 979 | 60 " | 994 |
| 4 " | 969 | 25 " | 982 | 70 " | 997 |
| 6 " | 970 | 30 " | 984 | 80 " | 999 |
| 8 " | 972 | 35 " | 986 | 90 " | 1,001 |
| 10 " | 973 | 40 " | 988 | 100 " | 1,003 |

A pound of steam at atmospheric pressure, in condensing into a pound of water at 212° F., gives out about 965 units of heat, that is, the heat that it gives out would be sufficient to raise the temperature of 965 pounds of water by one degree. If the steam were originally at a greater pressure than that of the atmosphere, it would give out a little more than this amount of heat, but the difference is not nearly so great as might be expected. Thus one pound of steam at 100 pounds gauge pressure gives out 1,003 heat units upon condensing into water at 212°, and this, it will be seen, is only about 4 per cent greater than the heat given out by the same quantity of steam at simple atmospheric pressure. The number of heat units given out by a pound of steam, in condensing into water at 212°, is given, for various gauge pressures, in the accompanying table, which is based on data given by Clausius.

Now let us take a numerical example. Suppose our tank contains 7,500 pounds of water at a temperature of 48° F., and we want to know how much steam must be drawn off from a boiler carrying 70 pounds in order to heat this water up to the boiling point. Our rough rule, of allowing one pound of steam for every five pounds of water, would call for $7,500 \div 5 = 1,500$ pounds of steam, or three-quarters of a ton; and while this result does not pretend to any great degree of accuracy, it is near enough to the truth to show how badly deceived a piper would be if he "guessed" that a hundred pounds or so would be sufficient.

To calculate the amount of steam required with greater accuracy, we must first find out how many heat units we have got to supply to do the required work. The water in the tank is originally at 48° F, and we wish to heat it up to 212°. We must, therefore, raise its temperature $212° - 48° = 164°$. Now, a "heat unit" is the amount of heat that is required to heat one pound of water one degree, and hence it would take 164 heat units to heat one pound of water from 48° up to 212°. But we have to heat no less than 7,500 pounds through this range of temperature, and since every one of these pounds calls for 164 heat units, the total heat supplied must be

$$7,500 \times 164 = 1,230,000 \text{ heat units.}$$

Having found out how much heat will be required, the next question is How much steam, at 70 pounds pressure, shall we have to use to obtain this quantity of heat? By referring to the table we see that one pound of steam (at 70 pounds gauge pressure) will furnish 997 heat units and no more; and, therefore, to get the required 1,230,000 heat units, we shall have to use

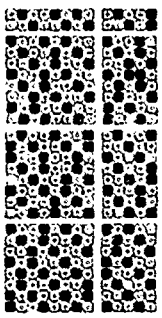
$$1,230,000 \div 997 = 1,234 \text{ pounds of steam.}$$

This process may be summed up in the following rule:—

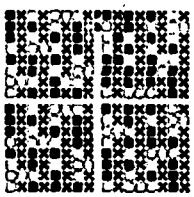
To find the weight of steam that will be required to heat a given body of water from a given temperature up to the boiling point, multiply the number of pounds of water in the tank by the number of degrees through which the water is to be warmed, and divide the product by the constant that is given in the table for the particular pressure of steam that is to be used. The result is the number of pounds of steam that will be required. [If the contents of the tank is given in cubic feet or in gallons, instead of in pounds, multiply the number of cubic feet of water in the tank by 62.3, and the product will be the weight of the water in pounds, or multiply the number of gallons by 8⅓, and the product will be the weight of the water in pounds.] The method of calculation here given is strictly accurate, when the steam is blown directly into the liquid to be heated, but when the water of condensation is kept separate from the contents of the tank, and is removed from the coils by means of a drip pipe, the result obtained by the foregoing rule is merely a close approximation, unless the heating process is so regulated that the condensed water drawn off from the coils is always just at 212°. If the condensed water so drawn off is below 212° (as it may sometimes be, when the water in the tank is still quite cold), the rule gives a result slightly too large. It is always very close to the truth, however, and its departure from strict accuracy is due merely to the fact that in making out the table given above we have assumed that the condensed steam cools precisely to 212°. If it should cool a trifle more or less than that, owing to its being drawn off from the coils before the water in the tank is fully heated to the boiling point, the result obtained by the rule will be in error by a correspondingly slight amount.

# Textile Design

DESIGN 1.



DESIGN 2.



DESIGN 3.

*(Roberts Beaumont, M.S.A. in Textile Recorder.)*

SUITING WEAVES.

Three designs for suitings are supplied, the two former being for single make fabrics, and the latter for fabrics backed with warp. The following are the weaving particulars:

DESIGN I.

Warp: 2-32s.

For 10 threads: 1 thread of 2-32s light shade.
1 " dark "

For 104 threads: 2 " light "
2 " dark "
4 " light "
2 " dark "

For 100 threads: 2 " light "
2 " dark "

20s reed, 5s.

Weft: Same as warp; 96 picks per inch.

DESIGN II.

Warp:

For 57 threads: 1 of 20 skeins dark shade.
1 " light "
1 " dark "
1 of 30 skeins and 40s silk twist yarn.
1 of 20 skeins dark shade.
1 of 30 skeins and 40s silk twist yarn.

9s reed, 4s.

Weft: Same as warp; 34 picks per inch.

DESIGN III.

Warp: 2-48s worsted; 24s reed, 6s.
Weft: 24s worsted; 70 picks per inch.
Warp: 2-30s.

For 24 threads: 2 threads fancy shade.
6 " light "

For 256 threads: 2 " dark "
6 " light "

17s reed, 8s.

Weft: 2-30s.

For 112 picks: 2 picks dark shade.
1 " fancy "
1 " light "

For 148 picks: 3 " dark "
1 " light "

64 picks per inch.

## THE LATE D. M. FRASER.

By a sad shooting accident D. M. Fraser, of Almonte, lost his life on November 6th. The party to which Mr. Fraser belonged consisted of D. M. Fraser, J. W. Wylie, and M. Patterson, Almonte, W. A. Logie, Hamilton, and Robt. Patterson and W. Findlay, Carleton Place, and three men. They were camped at Burns Lake, Griffith township, Renfrew county, Ont. On the morning of the 6th the hunters went out in parties, Mr. Fraser and Legris, a guide, going together They separated later on, each taking a different runway. Mr. Fraser sighted a deer and fired two shots, but failed to bring down the game. The animal dashed out of sight and Mr. Fraser repeated his rifle, expecting another shot. He stood upon a log and rested his right arm upon the rifle. The butt of the rifle slipped off the log, and in the drop the weapon was discharged, the ball passing through the arm between the elbow and the shoulder, breaking the bone and causing an ugly wound. Mr. Fraser was alone, and about three-fourths of a mile from the lake. He held the injured arm with the left to staunch the flow of blood, and in this manner started to walk to the lake, where he expected to obtain aid. By the time he reached the water he was much fatigued. He shouted for help and Mr. Logie, of his own party, tied up the wound and he was soon assisted by some others from the camp Mr. Fraser was able to get into the canoe himself and was paddled across the lake. He was then carried to a farm house about a mile distant, where he was made as comfortable as possible, and a boy was dispatched to Douglas for a surgeon, a distance of 22 miles. This was about noon and the accident occurred at about half-past eight. Mr. Fraser rested comfortably all afternoon, took nourishment, and had no thought of serious results, nor had any of his friends. About nine o'clock at night Dr. Sparling arrived from Douglas, asked Mr. Fraser some questions, administered some stimulant and proceeded to examine the arm, when all of a sudden the patient swooned away, the heart failing, and death followed in a few minutes

The party reached Renfrew early on Sunday afternoon with the body, which was taken to Almonte on Sunday evening.

D. M. Fraser was the son of the late Donald Fraser, barrister, of Perth, where he was born 37 years ago. While still young he moved to Almonte, where he received his education. He entered the law office of Macdonell & Dowdall, and later was called to the bar. He entered partnership with Robt. Patterson, who was called to the bar about the same time, and the young men opened a law office in Carleton Place. A year or so later Mr. Fraser withdrew and took charge of a banking concern in Kingston for a time. He again returned to Almonte and formed a law partnership with some of the leading lawyers, but a few years ago he abandoned law and devoted himself to manufacturing. He purchased a part of the Elliott property and started a knitting factory, which is one of the industries of the town. In 1891 Mr. Fraser contested North Lanark in the interest of the Reform party, his opponent being Judge Jamieson, and was defeated by a majority of 300. In the same year he married Miss Caldwell, of Lanark, daughter of the late Boyd Caldwell, Esq. On the 9th, the day of the funeral, all the mills in Almonte were closed down and business generally suspended.

## THE SAXONY HOSIERY TRADE.

"In Limbach, there is a marked improvement in the circular knit goods trade, owing to big orders for socks and stockings from America. The quantity and quality are satisfactory, but the terms are so low that manufacturers are not able to see where the profit is going to come in," says the correspondent of the *Knitters' Circular*. "The exporters will probably find it hard to lodge these orders, unless accepted for the sole purpose of giving the men employment or getting rid of stock. In gloves, too, several orders have been received, but not yet disposed of by the exporters. They either hope to reduce rates by withholding their orders from the producers, or by collecting large sums of such orders. The early arrival of the cold season gives hopes of subsequent orders from retail dealers who expect a hard winter.

In Chemnitz, the hosiery trade is still as dull as can be. With few exceptions there are no orders to speak of, so that the factories can only work with greatly reduced labor, and shortest possible hours, to prevent the accumulation of surplus stock. Fancy goods in plaids and rings, as well as long stripes, prevail, and, although operations in this line have been extremely cautious, it is a favorable sign that fashion is taking this turn. The glove business is also slack. Only the better qualities are exported to America, and all the continental orders have been received. The usual plan of waiting till the last horn blows, has been given up this season, owing to the rise in silk. Not much hope is placed in repeat orders from retail dealers, who have a large stock on hand from last season. The business in hosiery at the autumn fair at Leipzig was tolerable, in spite of very low prices. The demand covered principally hunting waistcoats, stockings, sweaters, and sport stockings. The latter were especially salable The same may be said of Scotch and tan-colored hosiery, which is now the fashion Inland business for the coming season is not bad The export business might be much better. Max Wunchmann has a good silk finish for gloves, which is expected to replace the taffeta glove Fancies in hose are running well, especially for the Christmas time. Greens went like hot cakes, but agents here have an idea they are being overdone Scotch plaids and embroideries sell now, and always will sell. Staples have gone at low to medium prices. Bicycle, cotton, cashmere, and silk-plaited hose, with Tartan effects on the welt or fold, are asked for in fairly large quantities, so, too, are bike footless hose. Rumor reports a joint stock company to control the getting up of designs Manufacturers fought shy of the enterprise, in fact, recent advices say they deluged it with ice-water. Some talk is going round of manufacturers here removing their plant to America, the only uncertainty to such an action is that there is no stability in the American tariffs. Americans are likely to manufacture for themselves, and a Saxony firm of machine builders have already established an agency on the other side to push their build of Cotton's patent."

## NEW DYESTUFFS.

*Gallo Cyanine* (in paste) has been long known and appreciated by dyers (in powder form), as a blue of excellent fastness, combining well with logwood. The powder is ten times stronger than the paste. This color may be used to advantage where clear bright blues of good fastness at a low price are required. Circular with complete information, recipes, etc., is in rapid preparation.

*Alizarine Red Brown R*, also *Alizarine Brown G*. — Two new Alizarines which resemble the Anthracene very closely, dye on a chrome oxalic mordant fine, full dark browns, the former being decidedly of a red tone.

*Katigen Black Brown N*, has been on the market now for about one year, is now being used extensively in France and Italy in the dyeing of velveteen so much in use for workmen's garments. In consideration of this, a new pattern card has been produced by the Farbenfabriken Co., of Elberfeld, called Katigen Black Brown N, on cotton velveteen No. 629, 1897. Shades produced with this color may be altered or modified by simply topping with any of the numerous basic colors. The remarkable fastness of this color is its chief advantage; fast to boiling soap and soda, light, alkali, etc., dyed cold without a mordant. For samples, prices and further information, address, Dominion Dyewood and Chemical Co., sole agents for Canada.

## NEW FAST COLOR PROCESS.

A new process has been invented by the Farbenfabriken of Elberfeld, Germany, for obtaining colors on cotton, fast to washing (May, 1896). The process consists in dipping the cotton material dyed with direct dyeing colors, into the diazo solution of Paranitraniline (without previously saturating the cotton fibre with Beta-napthol as in use with Paranitraniline). In selecting dyestuffs suited for this method, shades very fast to washing are obtained. This applies specially to Browns, Maroons, etc, to a degree hitherto impossible to obtain with diazotising on the fiber or by after chroming. The process itself is very simple. Dye with a substantive color in the usual way, rinse two or three times and develop in the Paranitraniline bath by handling for half an hour.

Dye liquor: Twenty parts of this to one part of goods, that means a well diluted liquor, or otherwise goods turn stripy; finally rinse and soap.

Prepare a Paranitraniline bath as follows —

(a) Stir 2 lbs. Paranitraniline in 1 lb. cold water, until lumps have

been removed and the whole substance forms a uniform paste, add 19 lbs. boiling water and 5 lbs. concentrated hydrochloric acid 36 degrees Tw, *on stirring for a while the solution is complete.*

(*b*) Fill a wooden tub with 30 to 40 lbs cold water and now pour solution "A" into the tub, and the hydrochlorate of Paranitraniline precipitates in the form of a fine yellowish crystal; let this solution stand some hours to cool Adding ice is not necessary if the solution is prepared a few hours previous

(*c*) To the above cold solution add, whilst stirring, 1 1-10th lbs. nitrate of soda, 10 lbs cold water; after about 10 minutes the solution is almost clear, now make up the bath to 200 lbs. with cold water. The solution can be preserved for about three weeks in summer or longer in winter. One lb. of solution contains 70 grains Paranitraniline. *Just before using, add as many lbs. nitraniline solution to the cold* water contained in the vessel reserved for developing purposes, that the calculation amounts to ½ lb. nitraniline for every lb. of dyestuff used for the bottom shade, further add 140 grains acetate of soda crystals to every lb. of the diazo solution, and finally enter the goods. After having added the acetate of soda the solution will only keep two or three hours

## BLACK ON HALF WOOL.

A good full fast black on half wool linings has long been sought after by the dyer, and with this end in view, the Farbenfabriken Co. of Elberfeld have produced several new pattern cards, showing the newer blacks with latest dye methods. One card on half wool, Italian cloth and serge, will prove of value, as it shows a new method of dyeing Pluto black, a color admirably suited for this class of half woolen goods, as it is absolutely fast to steaming. Pluto black has the advantage that shades dyed direct with it, resist a sour cross-dyeing for wool without any after treatment, and without altering the shade, so that dyers can shade off in a sour bath according to pattern

The following dye method is recommended, per 100 lbs goods·

*Italian Cloth* — 7 to 8 lbs Pluto Black, 25 lbs. Glauber Salt. } Fresh bath.

Or, 5 to 6 lbs Pluto Black. 10 lbs. Glauber Salt. } Standing bath.

Boil 1 to 2 hours, rinse and shade in a fresh bath with

6 ozs. Fast Green Bluish.
3 ozs Fast Acid Blue B extra
2 lbs Acetic Acid.

If a harder touch is required, add half a pound chrome as soon as bath exhausts, and boil half an hour longer

*Serge Cloth* 7 to 8 lbs., Pluto Black G
25 lbs. Glauber Salt.
3 lbs Calcined Soda

Use one third less amounts for standing baths Goods to be dyed with Pluto Blacks require about one-third of the time and less steam than a Logwood Black Pluto Black comes in three brands, B, R., and G, viz., bluer, redder, and greener shades New pattern card and samples mailed gratis by the Dominion Dyewood and Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken, vorm Friedr Bayer & Co, Elberfeld, Germany.

## TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports into Canada during Sept, 1896, 1897, and the nine months to Sept, 1896, 1897 —

| | Month of Sept., | | Nine months to Sept., | |
|---|---|---|---|---|
| Imports to Canada | 1896. | 1897. | 1896. | 1897. |
| Wool | £ 105 | £ 3,095 | £ 6,616 | £20,402 |
| Cotton piece-goods | 26,579 | 31,735 | 353,772 | 298,129 |
| Jute piece-goods | 18,598 | 15,679 | 119,588 | 92,327 |
| Linen piece-goods | 9,747 | 8,711 | 117,811 | 91,763 |
| Silk, lace | 248 | 507 | 6,900 | 4,297 |
| " articles partly of | 2,482 | 2,409 | 26,617 | 15,982 |
| Woolen fabrics | 21,682 | 18,475 | 230,671 | 195,291 |
| Worsted fabrics | 36,099 | 45,893 | 447,971 | 464,872 |
| Carpets | 11,636 | 10,857 | 138,668 | 115,893 |
| Apparel and slops | 53,510 | 35,991 | 286,776 | 236,877 |
| Haberdashery | 20,310 | 17,378 | 136,734 | 120,063 |

## GELATINOUS SOAP.

*This soap presents to the textile and dyeing industries numerous* essentially technical advantages, says J. Stockhausen in *L'Ind Text.* The practical application of the process can be made, for instance, as follows, viz., 100 parts castor oil (or oleic acid, liquid oil, or solid fat) are in four or six portions, at intervals of one-quarter hour, mixed with 30 parts sulphuric acid 66° Be., without constant stirring, but with the precaution that the development of sulphurous acid must be avoided. The mixture is for one or two days left in a cool place, and during the time occasionally stirred. The new gelatinous soap is then prepared as follows, viz.:

*First Process.*—To 100 parts of the above product are 60 parts of caustic soda lye 36-37° Be., as free as possible from carbonic acid, added at one time, whether cold or hot, under constant vigorous stirring; the mixture is then allowed to stand for four to eight days until the crystallization is ended or the soap formed is freed from crystals. Thus an acid soap is obtained which was thus far unknown in the industry. In order to neutralize this acid soap in conformity with the different wants of the industry, one more part of caustic soda lye 36-37° Be. is added, and a further addition of soda lye gives an alkaline soap. Thus, either a neutral acid soap or alkaline soap can be at will produced by the described process. The soap thus obtained consists in a gelatinous mass. If a more liquid soap is wanted, water is added.

*Second Process.*—*To 100 parts of the above-mentioned product* add 100 to 200 parts lukewarm solution of kitchen salt 25-30° Be., for the purpose of eliminating from the preparation all free sulphuric acid and other possible impurities. This mixture is stirred until the saline solution has absorbed all those contaminations, and then left to stand one or several days, when the salt lye is drawn off from below. Then add to 100 parts of the purified product 39 parts caustic soda lye 36 to 37° Be., as free as possible from carbonic acid, at one time and without stirring, and to promote the combination heat to 80-100° C.

This soap is also gelatinous and acid, and can be rendered neutral, alkaline and liquid, as foregoing described.

## LITERARY NOTES.

Because the November number of the *Canadian Magazine* marks the opening of the tenth volume the management has labeled it an "anniversary number." A fine half-tone in tint of Boston's tribute to Leif Ericson, to commemorate the discovery of the continent of America by the Northmen forms the frontispiece. The reading matter is excellent, and embraces a wide variety of thought and study. Priority is given to the first of a series of twelve articles by Dr. J. G. Bourinot, C.M.G., F.R.S.C., on "The Makers of the Dominion of Canada." The subject is an extensive one, calling for much research and judgment in the selection of his materials. It is the intention of the author to deal in this series with the famous men and incidents of Canadian history from the Norse and Cabot voyage until the Federal Union, covering a period of 900 years. In the present issue the discoverers of the north-eastern coasts and the St. Lawrence valley, covering a period from 986 to 1000, are dealt with. The article is illustrated by a number *of fine cuts taken from the originals* A *complete account of* the Fenian movement and raid of 1866 from the pen of John A. Cooper is a carefully prepared article containing much valuable information respecting the origin of the movement and each step which led to its final collapse. The article is profusely illustrated with maps and photographs which lend it additional interest. For lighter reading there are instalments of the serials, "Hagar of the Pawnshop" and "The Pilgrims of the Old Meeting House," and an interesting story, "The Finger of the Devil's Hand," by Lee Wyndham. A number of poems, including "A Tribute to England's Queen," meet the needs of lovers of poetry, and two full-page illustrations representing features of the present campaign in India will be studied with interest. In the editorial department the first of a series of ably written articles upon "Current Events Abroad" by A. H. U. Colquhoun appears.

The November number of the *Century* begins a new volume of that magazine. A new serial novel of New York life, "Good Americans," by Mrs. Burton Harrison, is begun, and will run for half a year. It deals with contemporaneous social types and tendencies. The first

part of a serial poem by James Whitcomb Riley is printed, accompanied by illustrations by C M. Relyea Mr. Riley calls the poem "Rubaiyat of Doc Sifers," and in it he tells in characteristic vein of a quaint and lovable village doctor, giving anecdotes and descriptions of the doctor's ways and doings from the point of view of an old fellow-townsman. Hon. A. W. Terrell, lately United States Minister at Constantinople, contributes an "Interview with the Sultan," in which he reports verbatim the Sultan's views on the Armenian question, etc. The words of the Sultan are given by authority, on account of his desire that his views should be made known to the American people. The Swedish journalist, Jonas Stadling, describes, as an eye-witness, "Andree's Flight into the Unknown," and accompanying the article are a number of pictures from photographs of the balloon and its departure. Mrs. Cornelius Stevenson, a young American woman, whose home was in Philadelphia, happened to be in Mexico during most of the period of the French intervention, and she has written for this number the first of several papers on Maximilian and his court The paper is entitled "An Imperial Dream," and deals with Napoleon's schemes for gaining glory on this continent. A dramatic paper by Miss Anna L. Bicknell describes with a great deal of vividness "The Last Days of Louis XVI. and Marie-Antoinette." "The Story of Chitral," by Charles Lowe, has timely interest. A new story by Chester Bailey Fernald, "The Cherub Among the Gods," introduces some of the characters made familiar in "The Cat and the Cherub." "The Romance of a Mule-Car" is a characteristic story by Frank R. Stockton. A poem by Bret Harte and a letter from Mark Twain are other features of the number.

The *Price Current*, a weekly market report and commercial review for Western Canada, comes to hand from Winnipeg as a new claimant to the support of the mercantile community. We wish our contemporary all success.

"The Statistical Year Book of Canada for 1896" has just been issued at Ottawa. It is not nearly so large as that for the previous year, the policy being to compress a large amount of information into a small compass, and give a larger issue for foreign distribution. The compiler, Geo. Johnson, F.S.S., has displayed his usual genius for statistics in this work of condensation, and the result is a marvelous amount of information packed into a very small compass. Among the valuable features of this issue is a chronology of the principal events of public interest during the past year, including a record of the deaths of prominent Canadians. Among the items of textile interest, we note that the recorded yield of flax has largely increased during the past four years. The acreage is not given for all these years, but the increase is indicated by the yield of flax seed, which is as follows: 1893, 116.454 bushels; 1894, 366,000 bushels; 1895, 1,281,354 bushels; 1896, 259,153 bushels. The record of sheep raising is condensed from the census returns, and shows that in every Province except Manitoba, British Columbia and the North-West Territories, there has been a decrease in the number of sheep raised, as recorded in the census years of 1881 and 1891. In the case of Manitoba, the number of sheep raised increased from 6,073 in 1881 to 35,838 in 1891. In British Columbia, the number in 1881 was 27,788, and in 1891, 49,163; but the increase in sheep raising is still more marked in the North-West Territory, in which, in 1881, there were only 346 raised, while in 1891, there were 64,920. The decrease in the other Provinces, however, more than counterbalances the growth in the West, for the total for 1881 was 3,048,678, while in 1891 it was only 2,563,781. The tables exhibiting the trade and commerce of Canada, embody all that is to be found in the various blue books, and are very valuable.

## THE WOOL MARKET.

TORONTO.—This market seems to have been cleared of fleece wool, the nominal price of which is 21 cents. Pulled wools are in moderate demand, 21 to 22 cents being paid for supers, and 22 to 23 for extra supers. There is a pretty good demand from the mills, and prices are likely to be maintained. Low grade foreign wools are being used to some extent to take the place of native wools in blankets and etoffs There are no transactions worthy of note between American and Canadian dealers.

MONTREAL.—Stock of fine wool in Montreal is low, although some small parcels have arrived lately. Of the cargo of Cape wools due at New York shortly for Montreal, about one half has been sold to arrive B.A. pulled wools are in moderate supply at unchanged prices Quebec black-sheep wools are advanced in price.

## FABRIC ITEMS.

N J. Nealis, clothier, St. John, N.B., has assigned to James B. Daly The liabilities are about $2,000, assets, $2,000, and it is expected to pay all claims in full

The Gault Bros. Co., Limited, Montreal, has bought in the stock of Lonsdale, Reid & Co., who are retiring from business The stock was valued at about $27,000.

It is understood that the senior partner in the firm of Caldecott, Burton & Spence, wholesale dry goods, Bay street, Toronto, will retire from the business January 1st, 1898.

John Patterson, of John Calder & Co., Hamilton, has gone on a visit to his native country, Scotland, and was presented by his fellow employees with a handsome token of regard before leaving

John Tierny & Sons, dry goods, Arnprior, Ont., are financially embarrassed. This firm is an old one, and its standing high. The chief creditor in Toronto is W. R. Brock & Co., most of the others in Montreal.

A meeting of the creditors of Schweitzer, Reid & Co., clothing dealers, Hamilton, was held in Toronto recently. Their statement showed assets of $10,700 and liabilities of $16,000 An offer of 50 per cent. was made, a large portion of the sum to be cash.

The estate of Thouret & Co., Montreal, dry goods jobbers, is to be wound up. He was formerly connected with another dry goods firm, from which he withdrew two years or so ago, with $20,000, which, however, has all been lost through unwise credits.

The creditors of E. T. Fournier, insolvent dry goods and clothing merchant, Ottawa, have appointed P. Larmouth assignee. J. A. Seybold, N. A. Belcourt, M.P., and J. T. Stowe, of Toronto, were appointed inspectors. The liabilities are $25,000 and the assets $20,180.

During the sealing season just ended only forty-one schooners of Victoria's fleet, representing a total tonnage of 2,708, have been engaged in the industry, as compared with sixty four last year. The whole fleet has given employment to 495 white men and 587 Indians The total catch, including 1,018 skins taken by the Indians off the coast, was 30,410, made up as follows On British Columbia coast, 5,082 on the Japan coast, 7,321, at Copper Island, 1,382, and in Behring Sea, 15,607. Of the seals captured the larger number were females, there being 16,258 females and 13,114 males.

An interesting commercial lawsuit will shortly be fought out in the courts on the action of E. A. Small & Co., wholesale dry goods merchants, of Montreal. The latter firm has issued a writ for $6,417 against E. J. Henderson, Toronto, as assignee for the estate of E D. Gough, clothier, Belleville. Gough recently assigned to Mr Henderson, and E. A. Small & Co claim to rank on the estate for the amount named in the writ. Some of the unsecured creditors, however, are contesting this claim on the ground that E. A. Small & Co are secured by notes endorsed by Mrs. Gough, and that, therefore, they are not entitled to rank on the estate.

The creditors of John Tierney & Sons, general store, Arnprior, Ont., met Nov. 13th, in the office of Henry Barber, Toronto The statement showed liabilities amounting to $21,000, all trade liabilities with the exception of $1,600. The assets, which consist of stock, book debts, and real estate, amount to $23,000. The real estate is valued at $22,000, but is mortgaged to the amount of $18,300, leaving a nominal asset of $3,700. Not long ago a mortgage of $6,300 was executed in favor of the sons, which came in for some adverse criticism from the creditors The principal creditors in Toronto are W R Brock & Co., T. Alison, Flett, Lowndes & Co., Alexander & Anderson, Caulfeild & Co. The principal Montreal houses interested are Gault Bros., Feador Boas, Green & Son, and Thomas Fisher, Son & Co An offer of 30 cents on the dollar was first made, and subsequently 35 cents on the dollar was suggested. The creditors, however, stood out some for 40 cents, and others for 50 cents.

# 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 Rosamond Woolen Co., Almonte, Ont., has recently built a new flume

The Woodstock, N.B., Woolen Mills Co, Limited, is working overtime.

C R. Whitehead has been re-elected president of the Montmorency Cotton Company

The employees of the Sanford Mfg. Co., Hamilton, Ont, have been put on short time

The Winger Woolen and Felt Boot Co, at Elmira, Ont., now employs about 40 hands.

H. M Holland and J. P. Haskell are carrying on business in Montreal as dry goods commission merchants.

A project is said to be on foot for the erection of a large cotton mill on the famous table rock at the Chaudiere, Ottawa, Ont.

The new superintendent for the Almonte Knitting Co., Mr. Costello, from Massachusetts, is now in charge of the plant.

A small fire occurred in the Dominion Cotton Mills Co 's mills at Magog, Nov. 5th It originated in a large fan used in the dye-room.

The Rosamond Woolen Co., Almonte, Ont., contributed a considerable amount of cloth to the relief of the fire sufferers in Russell County

A building permit has been issued to the Gutta Percha and Rubber Company, Limited, for an addition to its factory in Parkdale, Toronto, to cost $9 000

Whitely Eastwood had the thumb of his right hand taken off at the first joint, in the finishing room of the Canada Cotton Co 's mill, Cornwall, Ont, recently

The Hawthorne Woolen Mills, Carleton Place, Ont., are now lighted with electricity, a dynamo with a capacity of over 200 lamps having been put in recently

The Woodstock, N.B, Woolen Mills Company received a shipment of wool from Comox, B C., a short time ago. With the shipment came an order for blankets and cloths.

M. S McKay & Co., Galt, Ont., will rebuild their woolen mill at once. The destruction of the mill by fire was mentioned in last issue of THE CANADIAN JOURNAL OF FABRICS.

The estate of James Lockhart, Sons & Co., woolen merchants, Toronto, has been wound up. the assignee, T J Henderson, declaring a first and final dividend of 43⅓ per cent

A leading manufacturer in the county of Lanark says that the woolen business has not been stronger for years, and that the boom may result in factories running night and day.—Perth, Ont., *Courier.*

J J Jamieson, an employee of the Standard Woolen Mills, Toronto, was walking home from work not long ago and appeared to be in good health but he staggered and fell, and in a few minutes was found to be dead

Evidently the spoolwood men are looking for a big export trade in 1898 for the largest crews on record are being sent into the birch woods There is a good demand for all kinds of woodsmen this fall.—*Bangor, Me., News.*

The bleach and boiler rooms of the Northumberland Paper and Electric Company, of Campbellford, Ont., were destroyed by fire recently After hard fighting by the mill and town firemen, the remainder of the buildings were saved

The Empire Carpet Co., St. Catharines, Ont., is working overtime, and has recently set up four high speed Murkland looms and one cop machine The company intends to put in at an early date four Compton yard looms, and one Compton Art Square loom.

Samuel Henderson, proprietor of the Canadian Oiled Clothing Company, Port Hope, Ont., has bought from Mr. Paterson recently the plant and good-will of the Flint Paper Company, Young street Hamilton. He will transfer the business to Toronto, where he will consolidate his interests.

David Guthrie, of A. T. Paterson & Co., wool merchants, Montreal, the popular Caledonian, after a sojourn in the land of brown heath and shaggy wood, is returning in the 'Kastalia,' of the Donaldson line, in time for the Hallowe'en festival, with the fragrance of the heather hills still with him.—*Witness.*

Bellhouse, Dillon & Co., have recently had a visit from Dr. Bucher, managing director of the West Indies Chemical Works, Limited, at Spanish Town. The Doctor is eminently pleased with the success that their "Rio Cobre" brand of Extract of Logwood has met with in this market and in the United States.

A letter was read from W. S. Dresser at a recent meeting of the Sherbrooke, Que., city council, with regard to the establishment of the carpet factory in that city. The time had elapsed when the company should have been in operation, according to the by-law which was passed some time ago, and the letter asked that the time be extended.

Who are the Canadians referred to in this item from a United States contemporary: "Representatives of a large Canadian knitting mill visited Rockford, Ill., this week, for the purpose of interesting the people in that town in the project of raising $60,000 for stock in a new mill to be started there by the Canadians. The proposition is looked upon favorably."

The Eureka Woolen Mfg Co., Limited, Eureka, N S., has been very much rushed lately, and has made some additions to plant in order to keep up with orders. A fuller and washer have been put in by Young Bros, Almonte, Ont, and three knitting machines by R. Schofield, Toronto, Ont. A new penstock and flume have been built and a new 60-h.p. boiler installed.

Gottlieb Bofinger, an ex-employee of J. & J. Livingston, Baden, Ont., has been arrested by Detective John Murray in Detroit, on a charge of stealing from his old employers. It is claimed by the Crown that Bofinger secured large sums by making excessive pay sheets for the various mills of the Livingston firm, and pocketed the balance. When arrested he was employed at the Detroit Custom House.

The Royal Carpet Co, Guelph, Ont., have just completed a beautiful emblematic carpet for the Masons of Shelburne, Ont., consisting of 108 yards woven in appropriate colors; royal blue ground, with emblems of the Order showing prominently in cream, making a pretty effect. The quality of the carpet is their Canadian brand in three-ply and twisted yarn from pure fleece wool. H. H. Burrows superintended the manufacture of the work.

When the Aurora wool case was called at the recent assizes, on the request of T. H. Lennox, Aurora, Ont., the charge of wool-stealing against George W. Graham, of Aurora, was set at the foot of the list. Dr. R. Hillary, of the same place, certified that Graham was not fit to stand his trial Graham is accused of being an accomplice in the wool-stealing case, for which Amos McCoy, Murdoch Lloyd, and Joseph Willis were given terms in the penitentiary.

Gilbert Markle, an assistant engineer in the R. Forbes Company's mills, Hespeler, Ont., had the thumb of his left hand cut off recently while running the engine in the absence of the regular engineer. The air valve in the dash pot refused to work properly, and when fixing it he got his thumb caught in the spring, cutting it off. Markle is the catcher of the Hespeler baseball team in the Waterloo County League, and his many friends will regret to learn of his misfortune.

There is considerable discussion going on in Perth, Ont., over the woolen mill belonging to the estate of R. Gemmill & Sons. The municipality holds a mortgage on the property and has received offers for it from T. B. Caldwell, Lanark, Ont., and T. A. Code, Perth. There is a condition now attached to the property compelling the mill to be run on lines different to any other produced in the town. Mr. Caldwells's offer was for an unconditional and immediate transfer of the property, and was withdrawn when not accepted. Mr. Code's offer is under consideration.

A whitewear and clothing factory is spoken of as probable in Quebec city at an early date.

Geo Rumpel, Berlin, Ont., felt boot manufacturer, has installed a 150 light incandescent plant

The employees of Boyd, Caldwell & Co., Lanark, were recently entertained by the firm at a concert and ball

W. H. Lever, manufacturer of the famous "Sunlight" soap, will establish a factory in Canada, probably in Toronto.

P. Maltais, Murray Bay, Que., has contracted to cut in Gaspe this winter 1,500,000 feet of spool wood, for European firms.

G. W. McDonald, Renfrew, Ont., has been appointed assignee for the winding up of the estate of Samuel Reid, woolen manufacturer, Fergusiea, Ont.

St. Johns, Que., papers say that J. E. Molleur, St. Johns, has decided to establish a large straw hat factory in the United States, at a point near the boundary line.

It is rumored that the T. Eaton Company, Toronto, is contemplating the removal of its whitewear and clothing factory to Niagara Falls, Ont., if it can secure power there.

The mayor of Chatham, N.B., at a public meeting recently, stated that he was in correspondence with a firm, which, in return for a bonus of $1,000 a year for ten years, would establish a clothing factory to employ 500 hands.

C. A. Howd, who has been head laundryman at the Williams, Greene & Rome shirt factory ever since the company moved to Berlin, Ont., a dozen years ago, has accepted a situation with a large collar manufacturing firm in Detroit, at a salary of $1,500 a year.

On October 20th the store of B. F. Brook, in connection with his woolen mill, Listowel, Ont., was broken into, entrance being effected by cutting out a pane of glass in the window. A quantity of ready-made clothing, consisting of suits, overcoats and underwear, was stolen.

The action of James S. Wilson against Charles Calvert, wool dealer, of Toronto, for criminal libel, referred to recently, has been settled out of court, Mr. Calvert agreeing to pay Mr. Wilson compensation to the amount of $225 and to make a written apology.

The Auburn Woolen Mills, Peterboro, Ont., are running night and day now. At midnight recently when all lights were turned off in order that the generator might be oiled, Dave Fleming kept on at work at his loom and wove away in the dark, thus making a new record.

C. & G. J. Wilson, general merchants and woolen manufacturers, Cumberland, Ont., have assigned to A. P. Mutchmor Ottawa. The liabilities are about $45,000, and the assets about the same. The Messrs. Wilson have operated a one-set woolen mill in Cumberland since 1890.

B. F. Brook, who has been in business as a woolen manufacturer for 26 years, in Listowel, Ont., has also been making considerable improvements and additions to his building The store and offices in front of his mills have been torn down, and a new enlarged front, with plate glass windows, etc, has taken its place.

The action brought by Fred. Bullock against Andrew Murray, in Toronto, to restrain the defendant from infringement of patent in connection with a process of rug making, was determined by Judge Street last month. A report of the case will appear in next issue.

An Ontario charter has been granted to A. D Chaplin and B. J Leubsdorf, J. N. Walker, J. D. Chaplin, and R. Walker, St. Catharines, as the Perfection Knitting Company of St. Catharines, Limited, to manufacture knitted goods, fabrics, garments, jackets, stockings and hose. Capital, $2,000. The new company will turn out high grade novelties, it is said.

Up the Lake St. John district of Quebec, the people want modern factories. The Roberval Wool Manufacturing Company has been formed, with a capital of $10,000, and is applying for letters patent of incorporation to make woolen and cotton tweeds and shoddy, to spin flax, to dye, full, clip, press, etc. The principal place of business will be in the village of Roberval, on Lake St John The promoters of the company are. N. Wells, A. Du Tremblay, T Villeneuve. C Lindsay, L. P. Bilodeau, L. W. Gingras, J. Jureau, T Du Tremblay, P. E. Bergeron, L. E. Otis and B. A Scott.

A mass meeting of tailors was held recently in Toronto, to organize a local branch of the Union Garment Workers' Association of America. The organizing committee consisted of D A Carey, president of the Trades Congress, George W. Dower, secretary of the Trades Congress, and I. H. Sanderson. In his address, D. A Carey spoke highly of Hon William Mulock's action in having a protection clause inserted in the contract regarding the manufacture of mail bags for the Government, and a resolution was passed to have the same clause inserted in the contracts for the manufacturing of all Government clothing.

A petition was presented recently to the Lieut.-Governor of Ontario in Council, urging the Government not to add a plant for the manufacture of rope to the Central Prison industries, and to avail themselves of the opportunity afforded by the late fire at the Central Prison to discontinue the manufacture of binder twine. The document was signed by the following. Charles Boeckh & Sons, H. S Howland, Sons & Co., M. & L Samuel, Benjamin & Co., Robert Kilgour, the Steele. Briggs Seed Co., George A. Cox, Arthur P. Lee, Gowans, Kent & Co., Dovercourt Twine Mills Co., Aikenhead Hardware Co., T. Meredith & Co., Wheeler & Bain John Leckie, George Keith, H. P. Eckhardt, James Kerr Osborne, B. E. Walker, Gurney Foundry Co., Toronto; M. B. Perrine & Co., Doon; Alexander Main & Sons, Hamilton Cotton Co., Hamilton, John O'Donohue, mayor, John Hogarth, Stratford. There were also a thousand other signatures from Toronto, Hamilton, Doon, Preston, Elmira, Stratford and London.

The Canadian Minister of Militia has awarded the following contracts for supplies of various kinds.—Mufflers woolen, P Garneau, Fils & Cie., Quebec; braces, the T Eaton Co., Limited, Toronto; drawers, wool, knitted, J Seybold & Co, Ottawa, shirts, wool, knitted, J. Seybold & Co., Ottawa, gauntlets, hair, seal black, Zephirin Paquette, Quebec; moccasins, Henry Ross, Indian Lorette, Que; shirts, grey flannel, H. Shorey & Co., Montreal; socks wool, knitted, the Granite Mills, St Hyacinthe; brushes, blacking, Meakins & Sons, Hamilton; brushes, brass, Aikenhead Hardware Co., Toronto; brushes, cloth, Aikenhead Hardware Co, Toronto; brushes, polishing, Meakins & Sons, Hamilton; brushes, shaving, Meakins & Sons, Hamilton; combs, hair, S. H. Howland, Sons & Co., Toronto; knives and forks, S. H. Howland, Sons & Co., Toronto; razors, S H Howland, Sons & Co., Toronto; spoons, S. H. Howland, Sons & Co., Toronto; towels, linen, J. H. Seybold & Co., Ottawa; leggings, leather, Hodgson Bros. & Co., Alexandria; tents, S & H Borbridge, Ottawa, sheets, waterproof, the Bowmanville Rubber Co, Bowmanville, brooms, corn, H. S. Howland, Sons & Co., Toronto, brooms, stable, Meakins & Sons, Hamilton, brushes, hand scrubbing, Edwin Sheddon, Hamilton, mops, S. & H Borbridge, Ottawa.

**The Publishers of the "Canadian Journal of Fabrics" will give one year's subscription FREE to the first three subscribers who forward to the Toronto office, 62 Church Street, perfect copies of the issue of January, 1897.**

The Markham woolen mill is still idle

The Hawthorne Woolen Co., Limited, Carleton Place, Ont., are making extensive improvements to the plant.

The business of R G. Street, Dye Works, Halifax, N S, is advertised to be continued by Mrs M. J. Street, under the same name.

The Rosamond Woolen Co, Almonte, Ont., has ordered an $8,000 boiler and engine from Goldie & McCulloch, Galt, Ont. It will be in position by Christmas.

The estate of the Globe Woolen Mills Co, has declared a dividend of 25 cents on the dollar, on liabilities amounting to a quarter of a million A further dividend is to be declared later.

Just as we go to press we have learned that T. A. Code, of Perth, Ont, has completed the purchase of the mills of the estate of R Gemmill & Son, for which we mention the negotiations in another paragraph

Preliminary reports to the statistician of the Department of Agriculture, Washington, indicate an average yield of 181.9 pounds of cotton per acre. In the main the crop has been picked in excellent condition, the weather having been highly favorable

We have on our table *Brunner Muster-Zeitung*, which is a German publication, treating, in advance, of the season's novelties, and giving samples of the latest weaves, designs, colors, etc. It is by such means as this that the German manufacturers copy everything made in any country in the world. Anyone interested may see a copy of this work at our office.

Last November, Senator Sanford, of the Sanford Manufacturing Company, called his employees together and informed them of a reduction of 10 per cent., on account of the poor prices obtainable on cheap grades of clothing. On the first instant he again called all hands and told them their wages would be restored to the old figure, because of the improved outlook in trade.

At a recent meeting of the St. John's, Que., city council a resolution was passed accepting an offer of Jos. C. Saulnier, Truro, N S., felt hat manufacturer, to pay the cost of the transportation of his plant and employees to St John's, on the strength of his establishing his factory there Mr Saulniers has rented J. E. Molleur's old straw hat factory—lately used as a warehouse—and will move in at once and employ at least 20 hands.

In view of the improvements made in the manufacture of spring balances, the Department of Inland Revenue is considering the advisability of allowing their use in Canada Under the existing regulations they are not allowed in this country, on account of the consensus of opinion against them But if properly verified at frequent intervals, the department thinks the chances of fraud are very slight, and may legalize them.

Senator Sanford advertised some months ago, that to any married man who had energy and experience and some capital, he was prepared to give a quarter section of land on most favorable terms, to be paid for from the produce of the farm, and to give assistance necessary to enable him to work the place successfully. This offer still holds good. The railway goes through the property, and two railway stations are established upon it It offers postal and telegraph facilities, besides churches, schools, and every facility necessary for the comfort of the family

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—A French chemist has made a blue soap which will take the place of blueing. In ordinary soap he incorporates a solution of aniline green in strong acetic acid The alkali of the soap converts the green into blue.—*New Ideas*

—Wm J Matheson & Co, agents for the United States and Canada for Leopold Cassella & Co, of Frankfort, Germany, have issued some very beautiful samples of color cards, showing among other new products, their alizarine Lanacyl blues, navy blues and violets for wool, cotton and mixed goods, patent anthracine yellow R (a milling-fast color for wool), tannin brown B for cotton and silk, patent diaminogene blues, fast to light and washing. Regarding the last named, they say: "The fastness to light and washing, of dyeings made with these colors, exceeds that of any known dyestuff, being superior to those produced with Indigo, Methylene Blue, New Methylene Blue, etc. By combining the three colors, any shade of blue, from a clear greenish to a red violet tone may be produced, and while the dyeings of Diamine Azo Blue R, pat., are not quite equal to those of the Diaminogene Blues in fastness to light, they far exceed those of competing colors. Dyeings are absolutely fast to rubbing, thus producing results far superior in this respect to the basic blues or to indigo. In fastness to acids they are excellent, retaining their brightness of shade, and tinting white wool but very slightly, even when treated with a hot acidulated bath. All three colors are easily discharged to a clear, pure white by zinc dust, and blue and white effects of sharp distinctness can be readily obtained. Upon silk they produce dyeings that will withstand hot soap, and that will not bleed into interwoven raw silk. The Canadian offices of W. J. Matheson & Co., Limited, are 423 and 425 St. Paul street, Montreal, where samples may be obtained.

—*The Century Magazine*, with its November number, enters upon its twenty-seventh year. During its long existence, by reason of its many notable successes, it has won an assured and commanding position. During the coming year *The Century* will maintain its exceptional position as a magazine of entertainment and as a leader in art and thought. Its pictorial features will be notable, and it will command the services of the foremost artists, illustrators and engravers of this country and of Europe. Nothing like a complete announcement of its literary features can be attempted now. Dr. Weir Mitchell, whose novel of the American Revolution, "Hugh Wynne," is the great success of the year, has written a new story for the present volume. It bears the piquant title: "The Adventures of Francois: Foundling, Adventurer, Juggler and Fencing-Master during the French Revolution." The tale is full of romance and adventure. Mrs. Burton Harrison contributes a new novel of New York life, called "Good Americans," in which contemporaneous social types and tendencies are brightly mirrored and described. There will be a group of clever stories about horses and people who like horses, under the general title of "Gallops." "A Woman's Reminiscences of the French Intervention in Mexico" will be given in a series of graphic and highly picturesque papers by Mrs. Cornelius Stevenson. Further contributions to the interesting series of "Heroes of Peace" will be made by Jacob A. Riis, Gustav Kobbe, Elizabeth Stuart Phelps Ward, and others. For the benefit of readers of *The Century*, an unusual combination offer is made for this year. There has been issued "The Century Gallery of One Hundred Portraits," made up of the finest engravings that have appeared in the magazine, and representing a total expenditure of nearly $30,000. These are printed on heavy plate-paper, with wide margins, like proofs. The retail price of the gallery is $7.50, but this year it will be sold only in connection with a subscription to *The Century*, the price of the two together being $6.50.

—The representative of THE CANADIAN JOURNAL OF FABRICS, made a call on Manager S. Greenwood, of the Canada Cotton and Stormont Mills, Cornwall, Ont., recently, who gave him a cordial welcome, and furnished the information that the mills were running in full and that the outlook was very promising. Many radical changes, all for the better, have been made in the cotton mills here since Mr. Greenwood assumed the management. From a reliable source our representative learned that the goods of the mills now find a ready sale. Arthur Bates, superintendent of the Stormont, is a thoroughly practical man, and in him and John McPherson, superintendent of the Canada Cotton Mills, Mr Greenwood has two valuable assistants. The overseers one and all, are experienced men, and in the majority of cases, have occupied their present positions for the past ten years. The Cornwall Manufacturing Company's woolen mills are, under the management of A. Somerville, running full time, with orders ahead. Knowing ones furnish the information that Mr. Somerville has these mills now in excellent condition. Mr. Watson, an old and valued subscriber of The Journal, is the popular paymaster at the mills.

## POETICAL LIST OF FURS.

*(From the Montreal Gazette)*

William Boyd of Manchester, Mass., sends a poem, entitled "Swartzen," which contains a descriptive list of all the furs, known or unknown to the trade, written in the metre of "Hiawatha." Appended thereto are expressions of opinion as to the merits of this ingenious poem, written or printed soon after its publication in 1865. Among the writers of these notices are Charles Heavysege, author of "Saul," whose criticism, though printed, is not credited to any paper. The other personal criticisms are from pens still more famous—those of H. W. Longfellow and O. W. Holmes. The fourth is credited to the *Gazette*, April, 1865, and the Montreal *Family Herald* characterizes it as exquisite. Dr. T. Sterry Hunt thought highly of this production and helped to annotate it, and a well-known furrier of that day—the "Swartzen" of the title—assisted the author with his special knowledge. There is still another personage associated with Mr. Boyd's poem. The notice of the *Gazette*, just referred to, reads as follows:—

"We learn with much pleasure that the Hon. Mr. McGee, of the Canadian Cabinet, and Chief Commissioner from this Province to the forthcoming Dublin Exhibition, has ordered a thousand copies of what he very happily styles the 'clever Furiad' of 'Swartzen,' which is so illustrative of winter life in Canada, for distribution among the members of the press and the *literati* at the great international fair just alluded to." The *Gazette* then goes on to interpret the borders of the pages—the arms of our city at the top, the view of it at the bottom, the Victoria Bridge, the industrious beaver, and the interlaced pines, and maples and silky corn tassels on the margins, do honor to Canadian nature, and enterprise and industry, while the contemplative and contented-looking Indians indicate that Canada's prosperity was not won without regard to the welfare of the original lords of the soil.

The full title is "Swartzen, an imaginary advertisement, principally enumerative of the furs worn in Canada."

The poem thus begins:—

"Should'st thou ask us who is Swartzen,
Subject of these classic numbers,
We should answer, we should tell thee,
That he is a famous furrier,
And a hatter thrice artistic,
In the city of the railways,
Of the great canals and steamships.

In the old Canadian city,
Ville Marie or Sault aux Normands;
That his splendid shop and warehouse
Stand upon the Rue Madonna,
Heart of occidental region,
Near the artery, Argyle street.

Wouldst present thy gentle partner
With a muff or cap or boa;
Collarette or cuffs or tippet;
Driving hood or cloak or mantle;
Cape or victorine or gauntlets—
Fit for Scandinavian countess,
Fit for Muscovite czarina—
Of chinchilla, fitch, opossum;
Indri, swansdown, kid or genet,
Wavy lamb of Persian Empire,
Or the lamb in curl of Tartary,
Sooty phalanger Tasmanic,
Astrakan, ornithorhyncus,
Chipmunk, weasel, striate monkey,
Long-haired ape of Upper Guinea,
Caracal, Altaian squirrel,
Ringlet goat of Asia Minor,
Marten from Teutonic forests,
Or from rocky wilds Northwestern,
Sitka sable, dark putorius,
Fisher, lynx or royal ermine—
Go to Swartzen, ladies' furrier,
And procure the gifts hyberneal,
Gifts of duty and affection."

On another occasion we will give Mr. Boyd's description of the various kinds of robes, of the furs suitable for travelling, for domestic use and for different outdoor occupations, of the furs best adapted for the several garments worn by ladies of all ages, men and boys, for hats, gauntlets, overcoats, for walking, driving, hunting, skating, tobogganning, etc. "A clever poem of its kind," wrote Longfellow to the author, "and you have managed the strange names very adroitly."

## UNITED STATES TEXTILE IMPORTS.

The forthcoming summary in the United States Bureau of Statistics, showing the imports of textiles during September last, and during the first three-quarters of the current calendar year, exhibits some interesting features. While there is a heavy falling off in the imports of almost all goods during September, 1897, the figures for the nine months ending September 30th, 1897, show a very substantial increase over the same period a year ago. In the imports of raw wool the receipts for September, 1897, show but a slight increase over the month of August, the total for the month being 2,505,673 pounds, valued at $298,452, as compared with 4,795,176 pounds valued at $472,765, in September, 1896. In clothing wool of the first class there was an increase during September, 1897, the imports amounting to 1,640,364 pounds, valued at $211,077, as against 712,431 pounds, valued at $68,937, in September, 1896. In carpet wools, however, there was a heavy falling off, the imports in September, 1897, amounting to but 851,821 pounds, valued at $85,187, as against 3,880,345 pounds, valued at $363,032 in September, 1896. The figures for the first three-quarters of the current calendar year show a very large increase over the same period of 1896, the total for the nine months of 1897 being more than 320,000,000 pounds, valued at nearly $50,000,000.

as compared with 116,000,000 pounds in 1896, valued at $16,000,000. In woolen manufactures the falling off in September, 1897, is very pronounced, the total for the month being valued at but $536,693, as against $2,066,101 in September, 1896. The total for the first three-quarters of 1897, however, shows an increase, being valued at $38,251,172, as against $31,610,195 for the same period in 1896

## CHEMICALS AND DYESTUFFS.

The demand has been rather disappointing in most lines Sumac is much higher, $55 to $60 per ton now asked. Castor oil very steady, at 10c. to 11c., according to quality. Logwood easy. 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 | " | 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 | 5 00 | " | 6 00 |
| White sugar of lead | 0 07 | " | 0 08 |
| *Bich potash* | *0 10* | " | *0 11* |
| Sumac, Sicily, per ton | 55 00 | to | 60 00 |
| Soda ash, 48° to 58° | 1 25 | " | 1 50 |
| Chip logwood | 1 90 | " | 2 10 |
| Castor oil | 0 10 | " | 0 12 |
| Cocoanut oil | 0 06½ | " | 0 07 |