

# The Irish Textile Journal,

WITH WHICH IS INCORPORATED

## The Belfast Linen Trade Circular.

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### Notices.

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## VIENT DE PARAITRE

*Un Annuaire des Affaires Textiles dans lequel se trouve le nom de votre honorable maison.*

L'Annuaire des Affaires linieres Indigenes et Etrangeres.

COMPILÉ AU BUREAU DU JOURNAL TEXTILE IRLANDAIS A BELFAST.

PRIX, Relieuse Toile, 2/6.

CET ANNUAIRE DES AFFAIRES contient les noms et les adresses des Fabricants de lins Irlandais, des Fabricants des Textiles (Toile, Laine, Coton, Soie, &c.), des Filateurs, Blanchisseurs, Marchands en Gros, &c., aussi bien que une liste des Petites Industries Irlandaises alliées aux Textiles.

De plus l'Annuaire Irlandais, il qu a un Annuaire des Fabricants de Toiles, Filateurs et Blanchisseurs Anglais et Ecossois. La Partie Etrangère se compose de listes de Filateurs de lin et Fabricants de Toiles en Autriche, en Belgique, en France, en Allemagne, en Hollande, en Italie, en Russie, en Suède, en Suisse, et dans les Etats Unis.

Pour beaucoup de maisons l'Annuaire devrait être d'une très grande valeur, indigenes comme Etrangères affiliées aux Industries Textiles, surtout celles intéressées dans les affaires linieres.

### Notes.

#### The Manufacture of Linen.

IN the present number the first of a series of articles on the manufacture of linen appears, and the subject will be continued from month to month, until a complete handbook has been made up, for the guidance of those who are engaged in this branch of our staple trade. The writer (who resides in England) has had a long and practical experience not only in hand and power-loom linen-weaving, but also in cotton, wool, and silk-weaving, so that he is well qualified to deal with the subject. He will be pleased to answer any questions that may arise from time to time in reference to these articles, if sent in not later than the 1st of each month.

#### Belfast Technical School.

We have much pleasure in announcing that a public lecture on Technical Education will be given on the 21st inst., in the Ulster Minor Hall, by Mr. J. H. Reynolds, Director and Secretary of the Manchester Municipal Technical School. Mr. Reynolds, on hearing of the efforts of the Council of the Belfast School to place the institution on a more permanent basis, most kindly offered to come over and describe what he saw of the working of Technical Schools on the Continent, where he, in company with others, went on a tour of inspection before it was decided to build the splendid structure figured in this Journal last month, the cost of which will exceed £100,000. The lecture will be illustrated by some fifty lime-light views of home and foreign schools, so that a rare opportunity will be afforded to the friends of technical education of being acquainted with what is being done elsewhere. We trust the meeting will be a very large and representative one.

## The Cotton Crisis and its Effects on the Linen Trade.



(Specially Contributed by an English Correspondent.)

THE effects of a wages dispute in one of our great industries are not necessarily confined to the area within which the industry is prosecuted. Too often they are felt far outside it; for so interdependent have all the activities of a modern industrial state become, that no member can seriously suffer without the incommoding of the whole body. So it is in the present unfortunate conflict of which South Lancashire forms the arena. To say that over fifty thousand people have exchanged activity for idleness is only to state the case in its purely local aspect. The fact is that the markets of the world have felt the change, and that the allied textile industries have proved extremely sensitive to the disturbance in the cotton-spinning centres.

Nor is this to be wondered at. It is the direct outcome of the first principle of competition—the main influence which modifies commerce in the course of her evolution. Just as in the animal world there is competition not only between different members of the same species, but between one species and another; so in the world of trade the fight is not solely between producers of different kinds of one great class of fabrics, but it is also keenly carried on between class and class. The conflict is the keener the more closely the classes resemble each other—another analogy to the principle recognised by biologists.

For example, in the textile industries the varieties of production are so multitudinous that almost all the staple fibres employed resemble very closely, in some of their forms, the products of other fibres. At these points of contact competition is particularly active, and not infrequently one fibre will encroach upon and annex portions of the province of another. In this way has the British silk industry been practically destroyed, while the French and Italian branches of the manufacture have severely suffered. Silk velvets, for instance, gave way before the beautifully-finished cotton velveteens, from which they were scarcely distinguishable. Many classes of high-priced cotton goods have in turn gone to the wall in competition with the cheaper woollens. It is all a question, first of price, and next, and scarcely less important, of attractiveness. This is an age of cheapness, and nothing can rise in price without suffering in popularity. The boom in jute some months ago, bringing the raw material almost to the price of hemp, for a moment threatened the destruction of the jute industry. Conversely, the fall in the price of raw cotton last year was a powerful aid to cotton goods in their struggle with linen fabrics, and attacked them for a time very seriously upon the border-ground occupied by union goods. It is the purpose of this paper to consider the probable issues of this conflict in view of the altered circumstances which surround the cotton industry.

The new surroundings are explainable by two causes, a temporary and a more permanent. It is essential to carefully distinguish the one from the other. The temporary cause is the lock-out in Lancashire, and the cessation of some sixteen million spindles. Whatever might have been the course of prices in raw cotton, such a stoppage would tend powerfully to widen the margin between the cost of the fibre and the selling price of yarn, since there is a general wish to hold the latter in view of a time of even greater scarcity. A few figures will illustrate this. When cotton was at "the bottom," and the spinning trade in its normal state of activity, the spinner's margin was 2½d., which left him a clear profit of (say) ½d. per pound. But as raw cotton rose from 3½d. to 5½d., yarn went from 6d. to 8d.—an advance of 1½d. in the one case, and of 2d. in the other. The spinner's margin is now as much as 2½d., and as the cost of spinning has not changed, the clear profit per pound is ½d., or 75 per cent. more than in the former case. Now it would be well to repeat that this arises solely from the temporary cause of the disturbance of the cotton market, namely, the lock-out. It has nothing to do with the rise in raw cotton, which is a result of the action of the more permanent factor alluded to. While the resumption of normal spinning operations will speedily dispel the additional ½d. per pound of clear profit, it would not reduce but rather stimulate the value of raw cotton, upon which must depend the ultimate value of yarn.

This prepares us for a glance at the more serious, because less ephemeral, forces which are producing the buoyancy in cotton prices, fraught with such import to Belfast. The cotton crop of last year amounted to 9,000,000 bales. This year it will in all probability fall considerably short of 7,000,000 bales. Hence the rise in values, even in the face of decreased consumption. It is true that the 9,000,000-bale crop was too large. That is one reason for its being smaller this year; for the unprecedented cheapness of cotton left no profit to the grower, and no inducement to plant so extensively again. But the crop now being gathered is far too small, and the boom in prices is thus far perfectly sound. Not that it must be supposed that the boom would have come about so suddenly without the aid of the speculator. A large proportion of the recent buying has been speculative, and is responsible for much of the rise. But the argument of the "bulls" that there will be a comparative scarcity of cotton is founded upon good facts. With a crop more than 2,000,000 short of the yield of last year it is inevitable; for, although the world's total stocks are much larger than was the case twelve months ago, the excess does not come anywhere near this figure. The lessened consumption, owing to the stoppage, is, by comparison,

insignificant, being only 24,000 bales a-week. It will be found, by those who wait and watch, that, for many months at least, the price of cotton and the prices of all cotton products will remain at figures much higher than those which ruled earlier in the year. Hence the fortunes of war in the conflict between certain cottons and certain linens may be expected to go somewhat in favour of the latter.

It is true that not all the goods made in Ulster of the class called unions will be affected seriously. But many of them will become dearer by 40, 50, and 60 per cent. of the rise in the price of cotton yarn, that being the proportion of the substance employed in their manufacture. On the other hand, all such damasks and similar goods as are made entirely of cotton will feel the rise to its full extent, and become relatively much higher. Now this should be a considerable benefit to union goods, to pure linen goods, and, it may even be added, to the public who are the ultimate users of both. Cotton "bluettes" and "drabettes" will approach nearer in price to the linen descriptions of those goods, that is, to fabrics with a cotton weft on a pure linen warp. The smaller the difference in price, the more likely are consumers to discriminate in favour of the latter, for all users are familiar with their superiority in wear. The farmer wants a slop that will stand contact with a thorn hedge, and the mechanic expects his overalls to be fit to endure a reasonable amount of friction against hard substances. Even in materials of the brighter and more attractive class, destined for the Oriental markets, the same idea holds good. The so-called "kakie drills," which are largely sent from the Barnsley district to India, have shown signs of going down before the superior "linen kakies." The temporary difficulty in Lancashire and the cotton-using districts should be Ulster's opportunity; for although the maker of union goods will have to pay more for a portion of his materials, we have seen that the advance in the price of his manufactures will not be so marked as the advance in pure cottons, and the disparity formerly existing will therefore partly disappear.

On the other hand, the mixtures will be brought nearer to the level of pure linens, to the manifest advantage of the latter. The fact is, that if the people of Ulster fairly grasped the value of the advantage they might secure by the present dislocation of trade, they would bestir themselves to secure it without delay. The practical direction they can give to their activity in this respect is a more careful study of the tastes of their foreign customers in the matters of design and finish. As it is, the monopolies enjoyed by the Belfast manufacturers years ago are to-day divided amongst competitors in several industrial centres. Damasks and other fancy linens are very largely made in the North of France. Lille, the head-quarters of the industry, turns out a vast quantity of goods of this class chiefly for the American market. Across the Belgian frontier we find the same activity in progress. At Courtrai, favoured by nature with the river Lys, whose waters are peculiarly suited for the process of "retting," the manufacture of figured linens in considerable variety is prosecuted. In Germany the linen industry has recently undergone very rapid development; while in one or two Austrian towns there are factories engaged in the production of linens which, though perfectly plain, in point of beauty and fineness leave nothing to be desired. These countries are doing their best to forge ahead of Ulster, and the impartial buyer, who cares not where he goes so long as he obtains value for his money, cannot in all cases be blamed for taking his orders to them. The fact is, that the arts of effective finishing have received better attention at the hands of German chemists, and are practised with better success both in Germany and Austria than in Ireland. The art of design, too, has been carefully cultivated by the Germans and French, the latter being particularly successful.

It is in this latter respect that the advantage is perhaps the most marked. The variety and beauty of the Continental goods stamp them at once as worthy the attention of the customer. The Americans are large users of figured linens, and an example may be given typical of their attitude in the matter. Linens, like tin-plates, are apparently among the few things the Yankees cannot make. There are no discriminating tariffs, and it matters not whence the goods are brought so long as the fancy is hit. The United States Pullman Car Company recently placed orders for linens to the value of \$300,000, or £60,000. Table-cloths, napkins, towels, curtains, and such-like conveniences were required. At least eighty per cent. of the stuff was obtained from Germany, only ten per cent. from the North of Ireland, and the balance from other regions. The explanation of the successful competition of the Continent lies wholly in the fact that they have learned the value and necessity of technical training. They have produced a race of designers who can supplement the work of the mechanic and the chemist, and endow it with an added grace. These men are backed by the manufacturers, who know by experience the value of taking novelties, and who do not shrink from the expense of initiative. In England and Ireland the manufacturer very much confines his enterprise to the copying of what his foreign neighbours have done, and is always "behind the fair." He is no patron of an art which could be of great service to him. There is but one remedy. It is the establishment of a Technical School, embracing art and science teaching having a direct bearing on the special industries of this district. In a previous issue it was shown what Manchester is doing in this respect. Cannot Belfast do something towards the higher culture of those arts, a knowledge of which is essential to the further prowess of her traditional industries?



## Practical Instructions in Linen Weaving.

I.

(SPECIALLY WRITTEN FOR THIS JOURNAL, AND ALL RIGHTS RESERVED.)

### Introductory.



**PURPOSE** in a series of articles on plain and fancy linen weaving to assist students, managers, tenters, etc., with explanations, causes of defects in looms and their remedies, and every necessary information up to date, with practical details for economy and efficiency in production. Many difficulties crop up from time to time, and as it is often the unexpected that takes place, there is nothing like being prepared for meeting such contingencies without undue waste of time and material. There are numbers of operatives who have not been fortunate enough to acquire as much knowledge as they need, or as much as they would like to possess to enable them to compete with others who aspire to a better position. I may say, from long years of experience, that to fully understand weaving in all its details requires a great amount of patience. There are many methods and plans, unknown even to those who have spent years in a factory, which, when shown, may cause them to exclaim, "I could have easily done the same had I thought about it." Weaving is worthy to be considered as an art, and if, in my attempt to attract or direct students and others, a spirit of inquiry and a determination to be a master of this art is evoked, I shall be doubly remunerated, and proud of my endeavours.

### Plain Weaving.

Space is too valuable in this Journal to enter into the past or ancient history of weaving, if indeed it would be of any practical advantage. At present we have to deal with it under modern conditions, and in a very competitive age, for judgment and skill combined are now requisite to produce a profitable fabric. Of all classes of operatives in the linen industry weavers are the most responsible, as it is, with the exception of finishing, the last process in the manufacture where every previous defect must be made good in every possible way. The weaver who has the interests of his employer at heart will always be on the alert to prevent undue waste of materials or breakage of machinery; always considering that what he is entrusted with is costly, and not easily replaced without great expense. In fact, a good conscience is essential to make a good workman.

The fabrication of a cloth consists simply in the mere interlacing of the warp and weft threads; without weft to intersect these warp threads no cloth can be produced. If we look at a piece of design paper, we find a number of small squares divided into large ones; this is for the purpose of easily counting the extent of a design. The rows of squares from top to bottom represent warp threads; the rows across are for weft. Now if we place dots in position, intersection at once takes place, because the

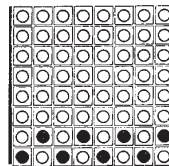


FIG. 1.

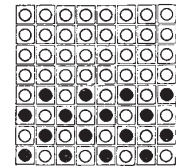


FIG. 2.

dots mean the weft or shuttle. As seen by Fig. 1, the two rows of dots give a plain weave, because two shafts will make a plain cloth, though a repetition is necessary, as shown by Fig. 2, to prevent crowding of the warp yarns and undue friction. This may be taken as the first step in designing; from this weave all others may be said to be obtained; it is their parent, and is the foundation or ground upon which many of our most elaborately figured weaves are placed. One of our greatest textile experts declares "that little or no attention is observed in the proper structure of a fabric, or its suitability for the purpose to which it is to be applied," because there is no systematic treatment. In textile fabrics attention may be devoted to one class of goods, and accuracy may be obtained by dint of long practice and perhaps close observation. A designer ought in every sense of the word to be a practical weaver, and I am free to say that any one who wishes to become thoroughly acquainted with weaving must begin with plain cloths. My reason for so saying will be found in the various changes and calculations which will be given further on, proving that a plain weave production is not so simple as it may appear. For want of this sound grounding, many pupils in our technical schools have mistaken ideas in relation to this first step, and think that to sit down and mark off a few squares of design paper with dots and marks is all that is necessary; but when these erratic efforts are worked in a loom, then is shown the absurdity and utter absence of proportion, for want of practical knowledge in beginning at the foundation.



The designing of patterns upon paper and the designing of patterns for cloth are not one and the same. A designer of the former will know nothing of their application, except he considers the application first by calculation, etc. To attempt the weaving of a variety of patterns upon *one warp*, without suiting the warp to the patterns so as to produce a cloth commercially profitable, is simply wasting material and time. It is true that a design may be made adaptable for different classes of fabrics; but this can only be done after a very careful consideration of the necessary arrangements of warp and weft; however good the pattern may be, the cloth may be far from satisfactory through a want of proper proportion. I may just say, if a man had all the knowledge possible, unless economy is used in following out his occupation, his skill is of little avail; for "prevention is better than cure." To those desirous of becoming thoroughly acquainted with weaving, practical knowledge is necessary; and "where there is a will there will be a way." In every description of woven cloth the two fundamental elements are the warp and weft, and the method of intersecting these threads forms a design. The finest texture that can be made is in a plain cloth, as the strain is divided equally in the breadth and length of a piece by the intersections supporting each other. The real plain fabric is composed of equal quantities of warp and weft, both as regards counts and threads per inch.

To change from one reed to another, so as to preserve uniformity of fabric, take for example a 12<sup>00</sup> on 37 inches in breadth. Suppose we want a piece of cloth similar in texture to be woven in an 18<sup>00</sup> reed, of course the size of the warp threads being equal throughout, the two pieces of cloth would be similar in construction, though one will certainly be one-third finer than the other. It is more than a century ago that a rule was given for determining the necessary size (or counts) of yarns to preserve uniformity in different counts of reeds, and this rule being founded on a mathematical theorem is found practically correct up to the present day. It is "as the square of any given reed is to the count of yarn that suits it, so is the square of any other reed to the size of yarn required for a fabric similarly constructed," and the reverse of this rule will give the reed to be used for change of material, thus—"Multiply square of given reed by the counts of yarns to suit the reed sought for, and divide by the original yarn count used; the square root of this quotient gives the desired reed." We may use the following examples as a proof. Suppose that No. 55 yarn is suitable for a 12<sup>00</sup> reed, what count will be necessary for a 14<sup>00</sup> reed to make a similar fabric? Cutting off the two cyphers from the number of each reed, we have  $12 \times 12 = 144$  (square of 12), and  $14 \times 14 = 196$  (the square of 14); then by rule—As 144 : 55 :: 196 to the answer, 75 leas. By the second portion of the rule to find the reed. If 75 leas yarn is required to make a fabric similar to a 12<sup>00</sup> reed with 55 leas yarn, what should the reed be?  $144 \times 75 \div 55 = 196$ , the square root of this is 14, the reed required; fractions are not considered when not sufficiently large to approach a whole number. This rule distinctly proves that changes must be made accurately, not according to customary usages or "rule of thumb," and it is universal whatever may be the class of fabric or materials composing it.

The rule for calculating by weight is similar, but it does not involve the question of size in yarns. We know that a certain weight of some *unknown counts*, say 8 ounces, has made a fabric in a 6<sup>00</sup> reed, and we wish to find the weight suitable for a 12<sup>00</sup> reed, so that the new fabric may be similarly constructed to the old one, the counts being entirely ignored. Then we have this calculation: Cutting off the two cyphers in each number of reed,  $6 \times 6 = 36$  (square of 6), and  $12 \times 12 = 144$  (square of 12), the proportion will be—As 144 : 8 :: 36 to 2 ounces, the weight for the change. Reversing the question, to find the reed, we have—As 2 : 36 :: 8 to 144, the square root of which is 12, the reed required. It must be noted that this calculation deals with *weight* of a sample regardless of count, or where the count cannot be easily ascertained. We know 300 yards of No. 1 lea linen yarn will weigh one pound, and the same weight will give us 12,000 yards of 40 leas, so that it is plain the example, so far as leas number may be anything, but the weights are a certainty.

Diameters of yarn counts or leas are found by reducing the leas to yards and extracting the square root. Thus—60 leas line  $\times$  300 yards = 18,000 yards, the square root of which is 134 nearly. This means the number of warp threads which will lie side by side in an inch of space. It is the practice to deduct 10 per cent. for linen yarns; this would give 120 threads, leaving out fractions, or say 121 fully. But when the weft is used to intersect these warp threads a further reduction in this number takes place, according to the amount of the interlacings. Then to find the proper number of threads, warp and weft, which will give a perfectly plain cloth, the diameter is multiplied by threads in a pattern, and this product divided by these pattern threads plus the intersections gives the exact number necessary. By the intersections or interlacers (both these words mean the same in weaving) is meant the rising and falling of the warp threads, according to the nature of weave. In plain fabrics we have two warp and two weft threads in a repeat. Then having 120 threads of 60 leas yarn, as shown above, these warp threads multiplied by the two threads forming a plain cloth repeat; the sum is  $120 \times 2 = 240$ , then that divided by threads in pattern plus intersections  $2 \times 2 = 4$ , the result would be  $240 \div 4 = 60$  threads per inch. The weave of a cloth has the same effect on the number of ends per inch required as the counts or leas of yarn. There is one point which it is necessary to take into consideration. Soft twisted wefts will more readily intersect than

hard twisted ones, because there is less friction of warp and weft threads when interlacing. The least possible twist in both, the softer and more velvety the fabric will feel, and better wear will obtain; but it must be clearly understood that there is a limit, and a wide difference between this class of fabric and a flimsy texture. The solution of problems in interlacing other than plain cloth will be entered into in good time. I do not wish to state that cloth can be constructed by figures; but they are a necessity, even to those of the greatest practical experience in manufacturing, and in particular to the student as a guide.

Another calculation will be found of advantage. If we have cloth a given weight per yard, with a given count of yarn, and we wish to increase the weight, then it is requisite we should know what count will give the result. *Rule*.—Square the weight, and as the weight required squared is to the given weight, so is the given count of yarn to the count sought. Or place the given count as the middle term in the proportion. *Example*.—A fabric weighs 8 ounces with 80<sup>s</sup> yarn, what counts for a cloth to weigh 10 ounces in a similar reed, etc. 10 squared is 100, and 8 squared is 64, then we have—As 100 : 80 :: 64 = 52<sup>s</sup> nearly.

*Reeds*.—When the breadth of a cloth is given in inches, to find splits or dents in an ell; thus a 12<sup>00</sup> reed on 32 inches in breadth,  $1200 \times 32 = 1038$  splits, when the product is divided by 37 inches. The cambric reed is reduced to any other reed on 37 inches. Thus—As 34 : 37, so is the given cambric reed to reed sought; for as an equivalent, if the cambric reed in this instance was a 20<sup>00</sup>, the answer would be 2176. The holland reed to a lawn. A 19<sup>00</sup> holland, how many splits on 37 inches? As 40 : 37 :: 1900 to 1757 splits. In crammed reeds or muslin stripes, let us take an example. A reed 24 dents or splits per inch on 30 inches in breadth, that will mean 720 dents, and to be reeded all over the breadth as follows:—3, 4, 4, 4, 4, 3 = 22 threads, or 6 dents; then—As 6 : 22 :: 720 to 2640 threads requisite for the breadth; or we may suppose the 6 dents to be all 4 in a dent = 24 threads, then 720 dents  $\times$  4 in a dent = 2880 threads, multiplied by 22 and divided by 24 will give the same result, 2640 threads. Taking a stripe and using the same reed, the pattern being 96 threads, two in a dent; 4 threads in a dent, one dent empty; 8 threads, two in a dent, one dent empty; 12 threads, 4 in a dent, one dent empty; 8 threads, 2 in a dent, one dent empty; 4 threads in a dent, and repeat from the first 96 threads: this is rather a complex pattern. Now we have 720 dents on the 30 inches; an examination of pattern shows 132 threads in 61 dents, and 4 empty = 65 dents. Then—As 65 : 132 :: 720 = 1462 threads in all.




## Practical Notes on Textiles.

VI.

(SPECIALLY WRITTEN FOR THIS JOURNAL.)

### Linen Bleaching.

EROXIDE of hydrogen is water slightly acidulated, and containing an extra strength of oxygen. The combination of hydrogen and oxygen was found to produce peroxide of hydrogen so far back as 1818; but its practical application as a bleaching agent was greatly impeded by the cost, and the inability to produce it in such a form that it could be used when required, and in sufficient quantity for all varieties of cloth and yarns. It may safely be asserted that no chemical element approaches so near perfection for general bleaching purposes as peroxide of hydrogen; but it depends wholly upon the amount of oxygen which it can hold in solution for its valuable properties. It is the evolution of the oxygen which gives the bleaching action, because it is brought into contact with the colouring matter of the fibres, which it oxidises and removes without injury to the materials; this is the principle of the old linen bleach which sun and air produced, and repeated washings of the fabric increased the whiteness. This is exactly what occurs in bleaching with the peroxide of hydrogen, with this distinction, that the concentrated agent is held in solution with the water. In the old practice the oxygen was more widely diffused by the combined action of the air and the sun's rays. By the artificial process of bleaching, one operation of a few hours gives results almost equal to months by the natural method. Water has two atoms of hydrogen with one of oxygen, and is known in chemical language as oxide of hydrogen, formula  $H_2O$ ; peroxide of hydrogen as a bleaching agent has two atoms of hydrogen with two atoms of oxygen; so that the formula becomes  $H_2O_2$ , showing an extra atom of oxygen. The production of this compound is a very complicated process. The oxide of barium is made to absorb oxygen from the air, which becomes dioxide of barium: this, in combination with water, gives up the oxygen and forms the peroxide. The oxygen of the solution, being very slowly set at liberty, penetrates in every direction, and will attack any matter that it has an affinity for, or it will escape into the air. Of all other matter, it has a particular affinity for the colouring substance in textile fibres, and by oxidation transforms the character of the colouring pigments to be bleached without any residue remaining after the goods are finished; other bleaching agents leave traces in the fibres, how-

ever careful the washing may be, and to the detriment of the materials operated upon. A clear white must give better effects for the dyeing process; the colours will be more fixed, as the fibre is in a better condition to absorb the dyes. In the action of peroxide of hydrogen, the original colour of the fibre or fabric is not merely encased with a fine white matter, but it is completely removed, so that no chemical reaction can follow; of course if the colouring matter is very dark, more oxygen will be required. One of the objections against this powerful bleaching agent is the time it takes to operate; but this is really much less than is generally supposed. If a tank is constructed sufficient to hold one half-ton of goods, with room to allow the liquor to circulate freely through them, the operation can be completed in twelve hours, without fumes, steam, or vapour. Again, a decided advantage in this bleach is that the operatives have complete control over the goods by changing the time in the bath, or its strength, and may easily tell how much has been accomplished. Great improvements have been made in the manufacture of peroxide of hydrogen, and, speaking up to date, it is now possible to produce it at such a cost as to be very little over the outlay under the present system. If the damage done to machinery, etc., where lime and acids are employed be duly considered, the economy in the use of peroxide of hydrogen would become obvious without any dispute. There is one form of it, called perozone, prepared so as to overcome the want of stability, uniformity, and other defects. It is portable, and can be sent any distance without the quality being impaired.

#### Mode of using Peroxide of Hydrogen.

The method of using it is extremely simple. The tank in which the goods are placed must be free of all metal fixtures (lead and antimony are the only metals that will not decompose the solution). For 112 lbs. of yarn 1,500 lbs. of water, with 500 lbs. of perozone, are put into the tank; 5 lbs. of silicate of soda 30°B. are dissolved in boiling water in a separate vessel and poured into the bath, which is then thoroughly stirred up. The yarn, after being well scoured, is entered and distributed evenly; the tank, being covered with a cloth to keep the dust and dirt out, is left in this condition for twelve hours, when the yarn is taken out, rinsed, and finished. The bath can be preserved for an indefinite period, and for further lots of goods from 9 to 12 lbs. of perozone are added, with 2 or 3 oz. silicate of soda dissolved as stated above; about one ounce of the silicate may be allowed for every 6 lbs. of perozone; the bath is thus maintained at the same strength. It may be as well to remark that the goods would be better moved about once every two hours. Piece goods can be run similar to the simple dyeing machine, rollers and bearings being of wood. Any method of operation which circumstances may indicate can be employed; but sufficient silicate of soda must be used, so that the bath may be slightly alkaline; the perozone is in a small degree acid. This prevents the decomposition and escape of oxygen; therefore, when some portion of alkali is added to it, the contact with foreign matter is sufficient to release the oxygen. The silicate of soda is the best of all alkaline bodies, as it is not so volatile as ammonia, nor likely to cause a too rapid evolution of the oxygen, by which the larger quantity is lost by escaping into the air. When the bath is not in use, it must be kept covered; there will be little or no action, and it can be preserved for use when desirable. A most desirable method for very fine goods, giving a satisfactory white colour, is as follows:—For 550 yards of cloth, steep in cold sulphuric acid about 3°Tw. until thoroughly impregnated, then take out and allow to lie in a heap for ten or twelve hours, afterwards well wash, and boil for six hours with 220 gallons of water, 22 lbs. dry caustic soda 72 per cent. (Brunner's brand), 66 lbs. of soap, 11 gallons of hydrogen peroxide 12 volumes, and 17 lbs. of calcined magnesia; after washing, sour through the sulphuric acid as in the first instance; wash again and dry. This process gives a finer and clearer white than by the ordinary use of the peroxide.

#### Bleaching Compounds.

A German patent gives turpentine as a principal constituent in a composition known as "Ozonin" as follows:—Hard soap, 125 parts; turpentine, 200; caustic potash, 22.5; water, 40; hydrogen peroxide, 90: the hard soap is dissolved in the turpentine, then the potash is dissolved in the water mixed with hydrogen peroxide, and then with the soap mixture; in the course of a day a stable mass is formed. Some useful properties are claimed for this substance.

This patent has been lately modified, and consists of 22 parts hydrate of potash, 128.5 parts of water, 125 parts colophony (which is a dark-coloured resin obtained from turpentine), 150 parts turpentine, 128.5 parts peroxide of hydrogen; the water, colophony, and potash are boiled together, then the turpentine is stirred in, and lastly the peroxide of hydrogen is added; this compound is said by users to be superior to peroxide of hydrogen alone, or an emulsion made of resin, potash, and turpentine. The patentee claims that equal quantities of an indigo solution were bleached by 5 drops of "ozonin" in half-an-hour, by 10 drops of peroxide of hydrogen in 48 hours (a wide difference in time), and by 5 drops of the turpentine emulsion in 12 hours. One part of "ozonin" in 1,000 parts of water is said to give a powerful bleaching solution, capable of bleaching all kinds of textile fabrics and other products without attacking the fibre. This must certainly be the ideal bleach so long, anxiously, and expensively sought for; further experiments may cease, and bleachers rest content from their difficulties if only a portion as stated is actually practical outside of a laboratory.

A German bleaching process is based upon the reaction which takes place between the red prussiate of potash (potassium ferrocyanide) and hydrogen peroxide in the presence of caustic potash; oxygen is thus liberated, and yellow prussiate of potash formed. Without entering into further details, we may point out the great cost from the expensive character of the agents; besides, the fabrics will be liable to a peculiar tinge of blue, through the decomposition of the yellow prussiate leaving its traces within the cells of the fibres.

#### General Remarks on Linen Bleaching.

We must, however, hasten to a conclusion of our remarks on linen bleaching. The bleaching quality of perozone depends entirely upon the most powerful and perfect agent in nature. It may be said to be the same agent which, working under natural laws, brings about the same results in bleaching. Prudhomme discusses the action that takes place when magnesia is used with peroxide of hydrogen, and comes to the conclusion that it is a superior combination, being a more stable compound. In all bleaching operations, whether the natural grass bleach or by means of chemicals, the principal point is in the treatment of the lye; pure materials of a proper standard are of the utmost importance, in fact a necessity; then proper temperatures require careful attention; steeping and cleansing are also points where judgment and skill in the nature of the materials are desirable. The utmost exactitude in proportions and preparation of a bleach bath may be rendered nugatory by imperfect boiling, steam not being sufficiently powerful, or too much condensed water, and many other minor defects owing to *hurry* and *scurry*, which result in loss at the end. In former papers we have alluded to water, its requisite purity, etc. Where soft water is difficult to obtain, it is good practice to make the chlorine bath for bleaching and the blueing process with condensed water if possible. Bleaching is the subjecting of a fibrous material to various operations in succession. Oxygen has the power of destroying organic colouring matters. Ozone is frequently present in the atmosphere, and it is supposed that the bleaching of fibres exposed to the air is due to its influence. Chlorine is an oxidising agent acting indirectly, so that the *unknown element* of a bleach is generally considered to be the effect of oxidation. Chlorine has a peculiar attachment for hydrogen, and has the power of replacing it by substitution. It is supposed the chlorine extracts the hydrogen from the water, setting free the oxygen, which seizes the colouring substance in the fibre, producing a colourless compound, more so in the fibre of flax than in any other vegetable textile. During the retting or fermentation of the flax plant, a colouring substance is formed which attaches itself to the fibres, and is insoluble in acids, boiling water, or alkalies, but after exposure to the air, sunlight, and moisture becomes soluble to the influence of alkalies or chlorine; the amount, therefore, of this colouring matter is greater than in cotton, so that it loses more weight in bleaching, which is a tedious process. We have not exhausted the subject of linen bleaching; much more could be said, but it is necessary to come to a conclusion, and we trust that what has been written will evoke a spirit of inquiry into the various experiments we have from time to time alluded to in the past issues of this Journal.



## SPECIAL REPORTS.

### The Making-up Trades.

#### The Apron and Pinafore Factories.



VERY great activity prevails in the apron and pinafore factories, and all the available workers are busily employed, as indeed they will be for some considerable time to come, upon orders for the coming spring trade. The majority of the manufacturers have, within the past few weeks, visited London, Manchester, and other centres of wholesale trade across the Channel, and personally, or in company with their agents, have been showing their samples of new designs for the ensuing season. The resultant trade has been of a highly satisfactory nature, and foretokens a continuance of the steady increase and growth of the industry in Belfast. The orders have been good in every branch of the business, especially in the holland end, which takes precedence, both in regard to the earlier date at which the new season's orders are placed, and with respect to the amount of turn-over. In this end, union goods not only hold but increase the lead they have taken in advance of those of all-linen, whatever the size or shape of the garment may be, and whether the material be plain or coloured. In this connection it is satisfactory to note—and it may be of some comfort to those who have been bewailing the injury supposed to be wrought to the linen trade by the increasing manufacture of unions—that the demand for all-cotton holland garments is practically defunct. All-cotton hollands were a few years ago cut up by the thousand pieces in the pinafore factories, but since the introduction of union pales, the consumption of them has been gradually falling off, till now it is virtually *nil*. And in like manner, since union checked pales and checked dowlases began to



be used, many classes of coloured all-cotton goods have shared a similar fate. In the fancy trade, prints and fancy muslins are again going largely.

**The Shirt and Collar Trade.**

In the shirt and collar and cuff branches, a considerable stimulus has been given to trade by the rapid advance in price of cotton yarns, and the consequent increased cost of cotton cloths. The advance, fortunately, occurred at a favourable time for the manufacturers, just as the spring buying was about to set in, and the principal makers-up have succeeded in covering themselves to a satisfactory extent at old prices. One of the leading shirt manufacturers here has many thousands of pieces of granddrills, harvards, and other coloured cotton shirtings on order at lowest old rates. The collar and cuff factories have also bought largely of croydons and white calicoes at old prices. Indeed, the readiness with which Lancashire manufacturers booked forward orders just previous to and at the beginning of the strike is quite a feature of the movement. Many of them now regret the precipitation with which they acted. The trade all over is in an exceedingly healthy condition. Some complaints are again heard as to scarcity of workers. In the white shirt departments, plain white linens are again being more used. Pique fronts for dress shirts are less favoured than formerly; indeed, it is difficult to see why they ever were so much in vogue. Coloured union shirtings seem to have no place in the home trade, which is, to say the least of it, somewhat remarkable.



**The Irish Woollen Trade.**

**Present State of Demand.**



REPORTS as to the general condition of trade in the wholesale warehouses here and across the Channel are far from being as satisfactory as could be desired, or even reasonably expected. Even before the season had arrived at a period so near its passing as it is at present, labour troubles in England, and other causes affecting both countries, had sensibly affected the volume of trade in most departments.

Fortunately for the Irish woollen manufacturers, and, of course, for other woollen manufacturers elsewhere, the trade of the woollen departments has formed a marked exception to the general dulness that has prevailed. Repeat orders for woollens have continued to come in with the utmost regularity, and the weight of the trade has been for those classes of goods in which the Irish makers are most interested. In overcoating orders Irish-made woollens hold a fairly prominent position, and there is a well-sustained demand for black and indigo serges, heavy tweed suitings, &c. Some ranges of extra heavy tweeds, that have been selling well in the better class tailoring trade here and in England for Inverness capes and wraps of various kinds for men's wear, are well worth the attention of Irish manufacturers. They are expensive goods, and are for the most part of French make. They are beautifully made, and the colourings are good; but there is nothing, either in the quality of the material, the texture, or the designs, to prevent them being produced by any Irish manufacturer whose looms are capable of weaving tweeds of a weight so unusual. There will be, in all probability, a much greater than average margin of profit in the making of them, and the cloths are of a class that, once introduced, are likely to be in permanent demand.

**Irish Dress Tweeds**

are moving off steadily in the better qualities, though the sale of the medium-priced goods has been considerably interfered with owing to the run upon Bradford serges, which, in a variety of bold twills and fancy diagonals, have been selling freely, as have also other English goods of somewhat similar make. The shades of these have, however, been far from giving satisfaction either to the merchant or the consumer, and there are many evidences that their hold on public favour will be but temporary. In the meantime, they have undoubtedly affected to some extent the trade in costume tweeds, and it is also noteworthy that buyers complain that there was little of novelty in the Irish dress patterns that were offered a month ago when the buying for the coming spring was under consideration. The display of a little more ingenuity and inventive genius on the part of the Irish manufacturers would not be thrown away. Heavy tweeds are in greater favour than ever for ladies' capes and wraps, and their popularity is increased by the very stylish way in which the made-up garments are turned out by the leading costumiers. These are now being produced in a variety of novel styles—some of them, with hoods lined with silks of the tartan patterns that are now so fashionable, are very handsome, the tweed and bright-hued silk forming a very effective combination.

**Mode of Conducting Manufacturing Business.**

The lawsuit in which the directors of Messrs. Clayton, Limited, Navan, and Kingsbridge, Co. Dublin, recently were, apparently through no fault or negligence on their part, involved, has drawn renewed attention to the question as to the most profitable mode of conducting the business of a purely manufacturing concern. In passing, it may be observed that the decision of the judges, so completely in favour of the company as it was, is regarded as a most righteous judgment, and has given the utmost satisfaction in mercantile circles generally. What we have to do with at present, however, is a question upon which a strong sidelight was thrown by some of the evidence given at the trial, and which is, whether of the two systems, that of

**Wholesale or Retail Trading,**

is calculated to be the most profitable to the manufacturer. The question is a wider one than is generally supposed. There is more in it than a mere choice between two classes of customers, and the weighing against each other of the probable respective amounts of purchases, and different modes of payment of each. There are many other elements that demand consideration. There is the question of stock. For the wholesale trade, all manufacturers aim at, and some succeed in, working almost entirely to order; while for the retail trade, the making and holding ready for immediate delivery of a large and varied stock is absolutely necessary, which involves considerable expense for storage and interest, and, not infrequently, loss, more or less heavy, in realising the unsold portion at the end of each season or later. Then there is the cost of handling the goods, packing, &c., which, in the retail trade, is much heavier than in the wholesale. Of course, the gross profit in the retail trade is, or ought to be, much larger, but so also is the cost of selling. It is, no doubt, impossible to bring forward absolute evidence in favour of one system more than the other, except that of results, and this is, I think, incontestably in favour of manufacturers serving wholesale customers, and wholesale customers only. It never was much of a secret, and since the date of the trial has become public property, that Clayton's—a concern with an ample capital, under capable and experienced management, and with all the advantage of machinery of the most modern type—has for some time past made a profit so small as to be almost problematical. Their system was that of serving the retail. On the other hand, similar firms who have made it the principle of their business to serve the wholesale only, have been working most profitably during the same period. A further instance which may be adduced is that of a well-known company in the North, which for some years, while doing the retail trade, laboured under a heavy stock, and made no satisfactory or profitable progress, but which altered its tactics a few years ago, addressing itself only to the wholesale trade, and has since then had a profitable career, and has been obliged by increasing trade to add to its productive power. The question is well worthy of the earnest consideration of the Irish woollen manufacturing trade, many of whose members seem to be somewhat undecided at present upon its merits.



**The Irish Cotton Trade.**

**Cotton Yarns.**



OMEWHAT of a pause has taken place in the purchase of cotton warp yarns since last report. Prior to the strike in Lancashire, manufacturers had anticipated their wants, and had accordingly placed the bulk of their orders at the low rates; and since that time they have been only buying what was absolutely required to keep their machinery in movement. Besides, the extreme dulness in the demand for most classes of union goods has tended to discourage the manufacturer in laying in more yarns, particularly at the present high rates demanded by holders, than is sufficient to float them over the present crisis. The consequence is that the operations of the past four weeks have been restricted to trifling parcels for immediate wants in their factories. As compared with this time last month, the advance may be put down at ½d. per lb., or at from 1½d. to 2d. per lb. from the lowest level. This advance has been still further accentuated by the higher tendency in the raw cotton market; but this is largely the result of manipulation based on the unfavourable reports of a short crop. As the strike is likely to last six or seven weeks longer, the opinion, as expressed by the Lancashire spinners, is that a further considerable advance is not improbable, and that within a very few weeks. In the meantime, neither here nor in the English cotton districts are manufacturers responding to the demands of the spinners, as the rates obtainable for manufactured goods leave no room for the payment of the advances asked; besides, there is nothing like a normal demand for goods, and no chance, therefore, of securing paying rates. The bulk of the present production is simply going into stock, and if yarns advance much more, the manufacture will in all probability be temporarily curtailed.

**Cotton Goods.**

There has been latterly rather a sluggishness in the printed cotton handkerchief trade, the American market being the only one that has been showing any sort of life, and even the business in that direction leaves much to be desired. Manufacturers of this article, therefore, have not been showing much freedom in the purchase of cloth, and, as a consequence, the transactions have been only of a limited character. The higher prices ruling for cotton yarns have naturally influenced the rates demanded for cotton cambrics, which now stand at about one shilling per piece higher than they were four or five weeks ago, or at about two shillings per piece advance on lowest level. So long, however, as there is an absence of activity in the demand for printed goods, the manufacturers of this article are convinced they cannot lose much by waiting, and they are, therefore, only purchasing such lots as they cannot do without.

**Current Items.**

IN SPITE the undercurrent of continuous grumbling that is always going on, evidences of healthy industrial growth are still plentiful enough in Belfast. Messrs. Robert M'Bride & Co., Bedford Street, are

# The Belfast Linen Trade Report.

DRAWN UP BY THE LINEN TRADE BOARD, APPOINTED UNDER THE SANCTION OF THE BELFAST CHAMBER OF COMMERCE.

**C**ONTINUED quietness marks the course of trade, and there is little, if any, improvement since last month. The general export trade shows an increase last month, but on home account business is of a very disappointing character.

## FLAX.

Supplies at the Irish markets show a further falling off, especially in the better qualities. Demand, generally speaking, has been brisk, and higher prices have been realised for nearly all classes. Foreign flax has also slightly increased in price since last report. The following are market reports since the 1st inst. :—

*December 1st.*—BALLYMONEY—68 tons of milled, varying in price from 45/- to 67/6; large attendance of buyers; mostly medium quality, with a few fine lots; demand brisk, and prices firm. NEWRY—14 tons of milled, prices from 5/- to 8/-; quality somewhat improved; demand very brisk, at high prices. *2nd.*—BELFAST—5 tons of milled at local market this morning, which varied in price from 5/9 to 8/-; quality medium and coarse. *December 3rd.*—BALLIBAY—20 tons of milled, prices from 6/- to 8/6; principally medium; brisk demand, and all flax bought up quickly. BALLYMENA—12 tons of milled, prices from 5/3 to 8/6 per stone; usual quality; market largely attended, and demand brisk. COLERAINE—20 tons of milled, prices running from 42/- to 63/6 per cwt.; quality mixed; demand active, and prices in sellers' favour. *6th.*—ARMAGH—2 tons of milled, prices from 7/- to 7/9. *7th.*—RATHFRILAND—12 tons of milled, varying in price from 5/6 to 7/6; all flax bought up; market fairly attended. *8th.*—MAGHERAFELT—26 tons of milled, prices ranging from 5/6 to 9/-; chiefly medium quality, with a few choice lots; demand very active; large attendance of buyers, and all bought up. NEWRY—16 tons of milled, which sold from 5/- to 8/3; usual attendance; prices firm. *9th.*—BELFAST—Only 1 ton of milled in to-day's market, which sold from 6/9 to 7/- per stone; mostly medium quality; well attended by buyers, and demand brisk.

## YARNS.

Demand has been steadily improving for the past few weeks, manufacturers being more willing to contract for forward delivery, seeing no prospect of easier terms, but the contrary. Owing to the scarcity of good flax, and the advancing tendency for all kinds, spinners have been much more difficult to deal with, and some have withdrawn their lists, being unwilling to contract ahead at current rates. Line warps as well as wefts have been active of late, so that stocks in producers' hands are reduced, whilst some are considerably oversold. Tow yarns have also sold freely, and many numbers are now scarce.

## BROWN POWER AND HAND-LOOM LINENS.

Light power-loom linens for bleaching have been in very slow demand, and stocks show an increase. Prices keep very firm, as cost

of production has been not only maintained, but tends higher, owing to the advance in flax. Medium and heavy makes meet with a moderate demand, and quotations remain very firm. Ballymena cloth is in quiet request, and the current production disposed of, prices showing a firmer tendency. County Down hand-loom linens have been selling a little better of late, and prices are also stronger. Roughs and drills have met with a slow sale, but hollands and canvas goods have been moving off rather more freely. In union glass cloth and other goods of this class a considerable business has been done; but though cotton yarns have advanced in price, it is difficult to get more for cloth. In the handkerchief branch demand is very much smaller than formerly, still there appears to be an improvement coming round, though it is very slow; production of both linen and cambric handkerchiefs having been cut down very much, stocks may be said to be without change on the month. Power-loom damasks have a moderate amount of attention, and production is taken off. Prices steady. Hand-loom makes are slower of sale.

## BLEACHED AND FINISHED LINENS.

*Home Trade.*—The tone of this branch of trade is very quiet, and the slight improvement noticed a few weeks ago is scarcely maintained. The approaching stocktaking period will accentuate the dullness; but with the turn of the year it is hoped a better demand will spring up, as stocks in distributors' hands are believed to be exceptionally light.

*Continental.*—Trade with France, Germany, and Italy, according to the Board of Trade returns, shows an improvement last month, but with Spain and the Canaries there is a falling off. Values for the eleven months of the year, as regards these countries, are slightly in excess of last year, which is a gratifying feature.

*United States.*—Season's trade has been fairly good, and shipments for last month from the United Kingdom show an increase of upwards of 30 per cent. over November, 1891.

*Other Markets.*—With the Foreign West Indies there is a considerable increase for the month of November, according to official figures, the eleven months also showing slightly better results than last year. British North America, Brazil, and the United States of Colombia all figure as much larger consumers last month; but Mexico and Australasia have fallen off.

For the eleven months of the year the total quantity of linen piece goods exported from the United Kingdom shows an increase of nearly 8 per cent. and values nearly 5 per cent. over the corresponding period last year.

Prices Current for ordinary Line and Tow Wefts. December 14th, 1892.

LEA NOS.	14	16	18	20	22	25	28	30	35	40	45	50	55	60	65	70	75	80	85	90	100	110	120	130	140	150	160
Line Wefts	—	—	—	7/6	6/9	5/9	5/3	5/-	4/7½	4/3	4/1½	4/-	3/10½	3/9	3/7½	3/7½	3/7½	3/7½	3/9	3/9	4/-	4/1½	4/3	4/6	4/9	5/-	5/3
Tow Wefts	5/9	5/1½	4/10½	4/9	4/7½	4/6	4/4½	4/3	4/1½	4/-	3/10½	3/9	These prices are per bundle of 60,000 yards of grey Yarn, subject to the usual discount for cash.										120 threads 2½ yds.—1 lea 12 leas—1 hank 16 hanks 8 cuts—1 bundle				

at present erecting an extensive addition to their handsome works in Alfred Street. The new premises are intended to be used, we believe, as a laundry. Messrs. Lowry & Son, Great George's Street, are the contractors, and the work is being satisfactorily proceeded with. It is but a short time since extensive improvements and alterations were completed in their handsomely-appointed warehouse in Bedford Street. If the Bruce Street Factory, the Bedford Street Warehouse, and the extended Alfred Street Works were all under one roof, they would form a very large and imposing concern indeed. Belfast people regard with much satisfaction such proofs of vigorous life and continued growth in a firm that has for so very many years borne an honoured name in their city.

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It might be asked, Is the manufacturing trade really in so depressed a condition as some of those who are engaged in it would have us believe? The starting of new weaving factories, and rumours of more to follow, meet one on every hand, and they cannot all be starting solely in the hope of an expected improvement. Neither are they, it is safe to assume, being started solely for the public weal. We think we may infer, notwithstanding all that is said to the contrary, that there is still considerable vitality in the manufacturing end. Mr. Pickles, of Burnley, has built a new factory on the Grosvenor Road, Belfast, where the manufacture of ducks and union goods is to be carried on. Mr Pickles' ability as a manufacturer of the special classes of goods he has undertaken to produce is highly spoken of by those who know. Moreover, a syndicate

—composed of gentlemen whose names are a guarantee that the syndicate knows what it is about—is said to be on the point of commencing the erection of a factory on the County Down side of the Lagan for the manufacture of damasks, plain and fancy, of which we shall learn more later on.

\* \* \* \* \*

MESSRS. J. N. KEVIN & Co., apron and pinafore manufacturers, are removing from their present warehouse in Howard Street to more extensive premises in Linenhall Street, the removal being rendered necessary by increasing business. The principal partner had many years' practical experience in the Franklin Street Collar Company (Limited), which experience is, it would seem, being turned to good account.

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MR. R. SAMUEL I. THOMSON, late managing director of Messrs. J. P. Westhead & Co. (Limited), has commenced business again as an agent for manufacturers in Manchester. Previous to his entering Westhead's, Mr. Thomson had a lengthened career as an agent, successfully representing well-known Belfast and Lurgan firms. At first Mr. Thomson's business was mainly confined to the home trade, but later he developed an extensive connection amongst Manchester shipping houses. He has now been appointed as agent for Messrs. Ewing, Son & Co., Belfast; and for Messrs. Phillips & Jones, apron and pinafore manufacturers, Durham Street Factory.



*Exports of Linen Yarns and Linens from the United Kingdom for the Month ended 30th November, 1892; and in the Eleven Months ended 30th November, 1892, compared with the corresponding periods of the Years 1890 and 1891.*

COUNTRIES.	MONTH ENDED 30TH NOVEMBER.						ELEVEN MONTHS ENDED 30TH NOVEMBER.					
	Quantities.			Declared Value.			Quantities.			Declared Value.		
	1890	1891	1892	1890	1891	1892	1890	1891	1892	1890	1891	1892
<b>LINEN YARN.</b>	Lbs.	Lbs.	Lbs.	£	£	£	Lbs.	Lbs.	Lbs.	£	£	£
To Germany, .....	201,900	206,200	200,600	17,688	17,767	16,378	2,557,700	3,005,800	2,545,700	208,905	244,238	214,788
Holland, .....	242,900	172,700	172,400	8,776	6,011	6,079	2,038,600	2,018,400	1,678,900	72,959	70,874	61,443
Belgium, .....	152,500	95,400	134,900	12,141	8,958	10,854	1,715,600	1,531,800	1,338,900	130,976	131,021	107,484
France, .....	112,300	161,100	94,200	11,860	16,531	10,901	1,307,300	1,407,500	1,193,100	137,910	155,327	134,542
Spain and Canaries, .....	274,200	306,400	217,300	10,372	11,410	9,945	3,528,200	3,420,800	4,670,200	126,621	124,996	172,184
Italy, .....	37,100	51,700	30,700	1,740	2,906	1,971	465,500	395,500	349,500	22,351	19,335	16,451
United States, .....	47,800	56,700	25,200	1,461	2,068	649	1,051,300	362,500	486,000	27,260	13,582	16,102
Other Countries, .....	195,100	136,600	212,800	10,623	5,991	10,157	1,496,100	1,554,200	1,917,300	70,207	70,486	87,630
<b>Total, .....</b>	<b>1,263,800</b>	<b>1,174,800</b>	<b>1,088,100</b>	<b>74,661</b>	<b>71,642</b>	<b>66,934</b>	<b>14,160,300</b>	<b>13,696,500</b>	<b>14,184,600</b>	<b>797,189</b>	<b>829,859</b>	<b>810,624</b>
<b>LINEN MANUFACTURES.</b>	Yards.	Yards.	Yards.	£	£	£	Yards.	Yards.	Yards.	£	£	£
To Germany, .....	222,400	246,200	252,600	10,901	11,661	12,082	3,020,700	3,316,400	3,269,500	144,653	159,272	159,249
France, .....	196,300	188,300	204,300	8,953	7,440	9,317	2,497,800	1,938,200	1,797,900	112,211	85,816	81,981
Spain and Canaries, .....	74,700	75,100	38,700	2,864	2,953	872	1,250,200	1,401,500	1,349,100	46,003	51,002	53,656
Italy, .....	60,100	53,700	74,600	2,387	2,632	3,725	845,600	779,900	856,300	35,971	34,431	38,467
United States, .....	3,957,000	4,197,800	5,495,100	95,692	100,100	118,695	91,231,700	72,963,800	87,602,200	1,940,541	1,557,320	1,824,348
Foreign West Indies, .....	1,551,000	1,192,300	1,482,300	29,824	22,002	28,594	22,484,900	16,706,000	16,725,600	422,783	318,394	321,388
Mexico, .....	300,500	213,000	111,400	7,094	4,888	2,592	2,220,700	2,017,300	1,530,300	54,155	48,360	37,982
United States of Colombia, .....	306,900	225,400	271,400	5,533	4,203	4,960	3,373,900	3,211,400	3,165,000	56,226	56,014	53,524
Brazil, .....	350,900	147,000	345,500	11,223	5,294	10,322	3,199,800	3,284,700	2,652,100	108,930	108,010	76,066
Argentine Republic, .....	88,200	29,500	163,400	2,827	1,195	6,067	968,600	523,100	1,093,500	27,207	12,743	33,592
Philippine Islands, .....	103,000	73,200	85,200	1,904	957	1,014	827,200	918,800	363,100	16,546	16,203	6,341
British North America British West India Islands & Guiana } Do. East Indies, .....	262,000	235,600	303,700	5,862	5,386	5,430	5,968,500	6,378,200	7,724,300	125,263	126,524	154,282
Australasia, .....	258,100	261,900	285,300	5,421	4,981	5,933	2,046,000	1,861,900	1,738,100	42,071	37,018	35,523
Other Countries, .....	183,500	243,900	202,600	5,603	7,333	5,825	3,046,500	2,813,500	2,656,400	86,913	78,900	74,503
<b>Total Plain, Un-bleached, or Bleached</b>	<b>9,123,100</b>	<b>8,928,400</b>	<b>10,661,600</b>	<b>220,207</b>	<b>215,308</b>	<b>239,586</b>	<b>15,307,360</b>	<b>13,081,760</b>	<b>14,275,880</b>	<b>3,456,750</b>	<b>2,962,335</b>	<b>3,147,628</b>
<b>Total Checked, Printed, or Dyed, and Damasks or Diapers, .....</b>	<b>732,500</b>	<b>706,700</b>	<b>845,400</b>	<b>19,006</b>	<b>16,007</b>	<b>18,662</b>	<b>13,639,100</b>	<b>10,878,900</b>	<b>10,794,800</b>	<b>318,235</b>	<b>277,290</b>	<b>270,527</b>
Sail Cloth and Sails, .....	316,700	221,700	235,200	13,866	10,448	10,750	3,438,500	3,027,400	2,681,900	151,697	134,845	122,762
<b>Total of Piece Goods, .....</b>	<b>10,172,300</b>	<b>9,856,800</b>	<b>11,742,200</b>	<b>253,079</b>	<b>241,763</b>	<b>268,998</b>	<b>17,015,120</b>	<b>14,472,390</b>	<b>15,623,550</b>	<b>3,926,682</b>	<b>3,374,470</b>	<b>3,540,917</b>
<b>Thread for Sewing, .....</b>	<b>Lbs. 226,700</b>	<b>Lbs. 182,200</b>	<b>Lbs. 234,900</b>	<b>£ 26,123</b>	<b>£ 20,855</b>	<b>£ 29,568</b>	<b>Lbs. 2,693,000</b>	<b>Lbs. 2,252,100</b>	<b>Lbs. 2,239,200</b>	<b>£ 322,046</b>	<b>£ 282,013</b>	<b>£ 281,227</b>
<b>Other Articles, .....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>74,149</b>	<b>75,518</b>	<b>79,402</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>1,015,975</b>	<b>943,219</b>	<b>898,601</b>
<b>Total Value of Linen Manufactures, .....</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>353,351</b>	<b>338,136</b>	<b>377,968</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>5,264,703</b>	<b>4,599,702</b>	<b>4,720,745</b>

*Importations of Flax—Dressed, Undressed, and Tow or Codilla of:*

COUNTRIES.	MONTH ENDED 30TH NOVEMBER.						ELEVEN MONTHS ENDED 30TH NOVEMBER.					
	Quantities.			Value of Imports.			Quantities.			Value of Imports.		
	1890	1891	1892	1890	1891	1892	1890	1891	1892	1890	1891	1892
From Russia, .....	Cwts. 67,817	Cwts. 55,726	Cwts. 29,917	£ 88,628	£ 75,350	£ 37,085	Cwts. 1,209,185	Cwts. 1,638,475	Cwts. 1,140,710	£ 1,547,904	£ 1,361,416	£ 1,484,255
„ Germany, .....	2,189	1,235	3,211	2,670	1,688	2,917	26,506	45,488	49,218	41,191	60,660	54,098
„ Holland, .....	5,713	8,713	3,638	16,152	16,640	8,461	90,777	77,585	86,827	245,789	196,124	186,644
„ Belgium, .....	31,383	36,030	17,506	87,940	102,745	36,323	259,349	232,518	252,538	685,140	779,348	639,376
„ Other Countries, .....	5,307	1,295	2,743	6,672	2,049	3,495	47,124	78,891	41,966	58,500	96,162	49,455
<b>Total, .....</b>	<b>112,409</b>	<b>102,999</b>	<b>57,015</b>	<b>202,062</b>	<b>198,472</b>	<b>88,281</b>	<b>1,632,941</b>	<b>1,522,957</b>	<b>1,571,259</b>	<b>2,578,524</b>	<b>2,493,710</b>	<b>2,413,828</b>

MR. HAMILTON ROBB is erecting a new power-loom weaving factory in Lurgan, and the looms are being put up by Messrs. Butterworth & Dickinson, Burnley, the motive power being water. A Stockport gas engine will also be used. The principal part of the production will, it is said, be linen and union handkerchiefs, and plain linen cambrics for hem-stitched and fancy handkerchiefs and manufacturing purposes generally. The United States branch of the business—Messrs. Robb, Capper & Co., New York—is, I am given to understand, doing a large and increasing business. Mr. Capper joined the firm in June last, having previously been in the New York warehouse of a leading Belfast concern. The firm of Hamilton Robb & Sons has long been in high repute on this side of the Atlantic.



## The Industries of Ulster.

(By a Special Contributor.)

### CARRICKFERGUS.



THE town of Carrickfergus is of great antiquity, alike as a seat of commerce and as a "place of arms." Its interesting and eventful military history is foreign to the purpose of this sketch. Nor can the past history of its commercial progress have any but the briefest reference. The latter, indeed, is specially interesting as throwing a flood of light upon the early trade history of the entire country, and the student who traces it through ancient volumes and fragmentary records will be well repaid for his toil. Instructive as well as interesting it is to read of the ventures and struggles of its tenacious and undaunted burghers, harassed as they were by the exactions alike of military residents and native chieftains; the story of its ancient charters and the betrayal or sale of its privileges; its ancient guilds; its early manufactures; its centuries-forgotten whale fisheries; the vicissitudes of its merchants in pre-insurance days, when the loss of argosies freighted with fabrics, wines, and spices often brought ruin to the owners; but the claims of space are imperative, and brook no trifling. Here, however, commerce found a home and flourished exceedingly. In 1600 Carrickfergus was the third port in Ireland, ranking after Dublin and Waterford, at which time also its mills and tanneries were famous; here was a market for the sale of linen yarns, wherein prices fluctuated as they do in other markets to-day, but more so—in 1745 the market was flooded, and linen yarns were a drug, selling at the then appallingly low price of 4d. per hank; here the woollen manufacture flourished, ere yet the Irish woollen trade had been killed by the kindness of our friends in Westminster; here were four important linen bleach-greens, the last of which was closed about the year 1800; and here, in the beginning of the present century, was an extensive cotton trade, represented by three large cotton spinning mills, two extensive cotton printworks, and a considerable weaving industry. But it is with the Carrickfergus of to-day we have to do, and we pass on hastily to glance at the condition of trade in this year of grace.

#### Present Trade of Carrickfergus.

The present condition of business—manufacturing and mercantile—in the Carrickfergus district is healthy and satisfactory. Connected with the textile trades there are several important and thriving concerns. Chief of these is the important firm of

#### Messrs. James Taylor & Sons, Limited, Barn Flax Spinning Mills,

whose yarns are held in high estimation by manufacturers, and command a ready sale at prices somewhat higher than are generally obtained for similar spinnings. The business was established in 1852 by the late Mr. James Taylor, senior, who, in 1858, was joined in partnership by his sons, James and Alexander, trading under the firm of James Taylor & Sons. Since then considerable additions have been made to the original building, and new machinery has been supplied. None of the original partners now survive. The business was formed into a limited liability company in 1883, of which the managing director is Mr. John M'Ferran. The mill premises cover about seven acres, upon which are erected a number of comfortable houses for the workers. The mills contain upwards of 15,000 spindles, driven by a compound tandem engine supplied by Messrs. Wood of Bolton, and give regular employment to about 600 workers.

#### The Woodburn Weaving Factory

contains about 400 looms, principally engaged on the manufacture of pales and roughs, dowlas, towellings, union goods, &c. The factory is situated on a site once occupied by a cotton spinning mill, on the Woodburn river, a short distance from the town of Carrickfergus. Linen weaving by power-loom was first commenced here in the year 1855 by the late Mr. James Gamble, who was afterwards joined in partnership by Mr. John Shillington, trading as Gamble, Shillington & Co. That firm subsequently transferring the scene of its operations to Belfast, where, in the Broadway factory, they carry on the manufacture on a greatly more extensive scale, the Woodburn factory became the property of Messrs. Girdwood

& Hamilton about ten years ago. Mr. Girdwood retiring, Mr. Hamilton, with some other members of his family, formed a limited liability company, under the style of the Woodburn Weaving Company, Limited, and as such carried on the business until, within the present year, it was purchased by Mr. M'Kean, who formerly held a responsible position in the firm of Messrs. William Ewart & Son, Limited, and Mr. Smith of Banbridge. Under the new management the business is steadily increasing, and the looms are all fully employed working to order.

#### The Sullatober Bleaching & Print Works Co., Limited.

Under various proprietors, an extensive bleaching concern has existed for many years at Sullatober, within about a mile of Carrickfergus town. The present company dates from the year 1872. The works have a splendid supply of water, which is said to possess valuable properties for bleaching and printing purposes. The premises extend over an area of about eleven acres. Besides a handsome residence for the manager, there are a considerable number of workers' houses on the property. The printing branch has been developed to a greatly increased extent, the firm having now in work both hand and the most improved modern processes of roller printing. Bleaching is carried on on an extensive scale, the principal part of the work consisting of the bleaching of linens, cotton lawns, and linen cambrics for the merchants and handkerchief manufacturers of Lurgan and Belfast.

There is also a bleaching, dyeing, and finishing works at Joymount, which has, up till recently, been chiefly engaged in finishing for Manchester houses.

The general trade of Carrickfergus has presented few features of change within recent years, with the exception of salt-mining and the shipbuilding industry. The latter is carried on in the steel shipbuilding yard of Mr. Paul Rodgers, under whose auspices it is making substantial headway. Though no very large vessels are built there, as large is reckoned now-a-days in ships, some of moderate tonnage for the foreign trade have been turned out, and it augurs well for the future of shipbuilding at Carrickfergus that the vessels there built are held in high esteem amongst shippers the world over. Salt-mining had been carried on fitfully for thirty years or so, until about ten years ago it was entered upon with increased enterprise, and has been extending rapidly since. There are now four distinct mining companies, each carrying on operations on a fairly extensive scale.

The population of Carrickfergus is increasing, and at the last census numbered, within the municipal boundaries, about 9,000. The various public works in the district give regular and well-paid employment to over 2,000 workpeople. The country around is prosperous, the markets are well attended, and the trading and shopkeeping community is thriving and prosperous.

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### Southern Notes.



OUR readers may, perhaps, know that the Labour Commission sent over some English ladies to Ireland to visit and report on female industries. Miss Orme, lady commissioner, was lately in Cork, and left this city for Limerick, and has probably returned to England by this time. Although I do not doubt this lady's competence and ability, and desire to make a good report, I cannot but think that she and the other Englishwomen who have been sent (one was at Belfast, I am told) will hardly be able to master the question of our women's industries during the short time that they spend in our island. But, even supposing this was possible, I object to Irishwomen being passed over in the selection of ladies to report to the Commission on Irishwomen's industries. Why should such names as those of Mrs. Power Lalor, Mrs. Browne, Miss Blanche Tottenham, Miss M'Cluskey, Miss Fanny Currey, and Miss Margaret Downes be passed over? The latter lady, who has given much time and labour to the cause of our working women, has lately addressed a very able letter to the *Cork Constitution*, on the subject of the English lady commissioners. Miss Downes says that having "written to the Duke of Devonshire a full statement of the question, the Government then proposed a Sub-Commission for Ireland, a step that was the immediate outcome of my letter to His Grace;" and goes on to state that "this Commission was never created. An almost valueless substitution has now been made."

I know that my late lamented friend, Sir J. E. Eardley Wilmot, wrote to one of the Commissioners, expressing himself in favour of Miss Downes' name being placed on the Commission. This was one of the last acts of his life. He was always most anxious that Irishmen and Irishwomen should lead the Irish industrial movement, and he more than once expressed his readiness to retire from the position of President of the Irish Industrial League if any competent Irishman would take his place. He rejoiced at the formation of the Limerick Industrial League, with Lord Early as President, and Lord Montague as Secretary. I regret to say that this branch ceased to exist some time ago. Whilst mentioning the name of the late President of the League, I take this opportunity of saying that his earnest, unceasing, and most unselfish and noble efforts on behalf of Ireland should never be forgotten, and I am glad to see that the League in which he took such deep interest continues its useful work.

A still greater loss to the cause than even the lamented death of Sir J.



E. Eardley Wilmot, has been the premature demise of the excellent and universally honoured Father Davis, of Baltimore. The noble work accomplished by this good priest is so well known that it is needless to dilate on it. I am indeed glad to see that a movement is started to maintain and develop the Fishery School at Baltimore, which owed its existence to the philanthropy and genuine patriotism of Father Davis. The news of his death called forth a universal expression of grief here, and most deservedly so. Perhaps no name amongst the Irish workers in the industrial movement is worthy of higher honour.

You will be interested to know that a friend of mine here is organising an industry in the making of crosses, wreaths, and chaplets for funerals, which will, I hope, give much needed employment to women of artistic taste and aptitude. This beautiful kind of work is especially suitable for feminine hands, and is already practised with success in Cork, and admits of great development. One florist here (Miss O'Shea) has real taste in the preparation of these memorials.

Another graceful industry for ladies is the preparation of Christmas cards. When I was last in Limerick, I saw some beautiful cards, which I was told were hand-painted by a lady. I hope that this branch of art-industry will increase.

Sunday's Well, Cork, Dec. 7th, 1892.

AUGUSTA JANE GOOLD.



(From our own Correspondents.)

### Irish.

DUBLIN.—In the woollen trade the late and current buoyancy of the market has at last had some effect upon prices, which have advanced to an appreciable extent. Confidence appears to reign pretty generally, and the raw material shows an advance in quotations. There has, however, been no disposition to purchase ahead in any quantity, although opinions seem to run towards the probability of prices remaining firm. I shall give the latest local quotations for raw wool at foot. Linens are just where they were; no alterations to mention, the market being undisturbed by any serious variations. Generally trade is good, and complaints are few and far between. Woollen manufacturers hope that alterations in the American tariffs may again open up outlets of late closed to them; but this of course cannot be looked for at once, as it is quite certain that no hurried or violent interference with the McKinley tariff will take place under President Cleveland. At the same time, it is fully to be expected that the late American elections will eventually result in the reduction of import duties, and consequently better times may be looked for in the not very distant future. Any definite move on the part of the new American Administration towards opening the transatlantic ports to British goods would naturally make it far more advantageous to English and Irish manufacturers to exhibit at the Chicago Exhibition than it could be under the present tariff regulations. The tendency of the financial and commercial policy of Mr. Cleveland's government will consequently be watched with keen interest. As promised above, I now append the latest quotations for wool in Dublin at the time of writing:—There is a firmer feeling generally in tone of wool markets, but figures are difficult to quote accurately in present cautious business. Down, 9½d. to 10d.; hoggets, 8¾d. to 9¼d.; ewe and wether, 8½d. to 8¾d.; seaside, 7½d. to 8¼d.; mountain, 7d. to 7¾d.; Scotch, 4d. to 6½d.

### Silks and Poptins.

In these materials things commercial are much as usual. The trade indeed varies very slightly from season to season, remaining steady without showing any tendency to increase, and fortunately none in the reverse direction. Messrs. Pim Bros. & Co. have been doing a fair trade lately in tartan poptins, and their looms are all busy, as indeed are those of the other Dublin manufacturers. There is a new material called Englandine which has obtained some popularity across the Channel, but, as far as I have been able to ascertain, no attempt at its manufacture has been made in Dublin, where indeed but little seems to be known about it. It is not, I believe, a mixture of silk and wool, though it was suspected of being so; but as I have not been able to come across any of it in Dublin, I can only rely for this information on the opinion of one of our manufacturers, who, though not certain, said that it "probably was not" such a mixture. By the way, a good deal of interest has been excited amongst the general public by Messrs. Lynch & Co., of Westmoreland Street, having brought one of their stocking-weaving looms from the Brabazon Street Factory, and having erected it in their window. Here a weaver is at work all day weaving silk stockings to the order of Councillor Shanks, our Lord Mayor elect. The loom and the industrious operator are an admirable advertisement for this enterprising firm, and have afforded an opportunity to many of learning how silk stockings are manufactured.

### Chicago and Irish Laces.

The Duchess of Abercorn, who is taking a very lively interest in the exhibit of laces for Chicago, announces that she intends to hold, if possible, a preliminary exhibition of the articles at Hampden House, Green Street, London, W. Her Grace wishes it known that, notwithstanding the many committees at work throughout the country,

should any lace-making district have been overlooked or accidentally omitted, all particulars can be obtained on application to the Secretary, Lace Committee, at the above address. "One result," adds her Grace, "of our labours—a result which is even now perceptible—is a revival of a cottage industry, one of hand labour, which in these days of agricultural depression and low wages brings grist to a needy mill, and which involves but little stock-in-trade and no expensive machinery." From an Irish point of view, it is curious to note that the *St. James's Gazette*, in calling attention to the Duchess of Abercorn's letter, spoke emphatically and only of English laces, evidently in complete and blissful ignorance that poor Ireland produced such an article at all.

### The Co. Mayo Hand-Looms.

The produce of the hand-loom erected in the Convent at Foxford, in the County Mayo, have found their way across to England. They were introduced there by some ladies interested in Irish industries, and I hope they will meet with the ready sale which they deserve. The initiation of this industry was referred to at the time in this Journal, but since then the work has been extended. The Superiress of the Convent, having made a fair start, applied to the Congested Districts Board for a grant in aid, which she received, and now a good number of the people in one of the poorest parts of Ireland are profitably employed. The articles made are tweeds and flannels; the former mostly in shades of grey, and suitable for either male or female wear. The flannel is a plain white one of open web, said not to mill up in washing, and is suited for the making up of morning gowns, etc. This effort at starting a profitable industry was a plucky one, and well deserved the success it has obtained—a success which I hope will go on increasing.

### The Technical Schools.

These are now in full swing for the winter session. Some 420 pupils are on the roll, giving an average nightly attendance of 130. The curriculum is an extensive one, and may be divided into four divisions:—1. Science Classes—embracing Practical Plane and Solid Geometry, Machine Construction and Drawing, Applied Mechanics, Inorganic Chemistry (Theoretical and Practical); Sound, Light, and Heat; Electricity and Magnetism, Mathematics, and Building Construction. 2. Art Classes—Freehand, Geometrical, Model, and Perspective Drawing, and Modelling in Clay. 3. Technological Classes—Boot and Shoemaking, Carpentry and Joinery, Metal Plate Work, Plumbing, Manual Instruction, Building, Surveying, Tailors' Cutting. 4. Commercial Classes—Shorthand, Bookkeeping, French, and German. Besides these principal divisions there are, as extras, Dressmaking and Cookery. Hitherto the Dublin Corporation have only assisted monetarily the Science and Art Classes, but in last July the Finances and Loans Committee of the Corporation were instructed to include in their next estimate "such a sum as a levy of 1d. in the £ would produce for the purposes of technical instruction." Thus next year the schools will benefit under the Technical Instruction Acts. The technical classes have hitherto been kept up by donations and the fees received, but this state of things will fortunately no longer obtain. The buildings are by no means fully suitable to their purposes, and the Governors estimate the necessary expenditure to make them applicable at £2,000. The Lower Kevin Street edifice was not designed for the purpose to which it is now being put. Originally, I believe, one of the "Dublin Mansions" of a former era, it passed into the hands of Messrs. Fry, lace manufacturers. To them succeeded, as far as is known, a schoolmaster who, no doubt, in his day taught what he believed to be most useful to the rising generation. I am not, by the way, sure whether the schoolmaster succeeded Messrs. Fry, or *vice versa*; it matters little; the building has seen many changes, and may see more. The sum of money asked for by the Governors would, however, I understand, be sufficient to make the schools thoroughly efficient, and it is to be hoped that the money will be found and allotted. There is one other matter with regard to the finances of these schools. The Governors have pointed out over and over again that a large proportion of the pupils come from the suburban townships round Dublin, and do not live in the city. Under the Technical Instruction Acts these townships could—not having schools of their own, and the Dublin ones being available to their inhabitants—levy the 1d. in the £ rate and pay the money to the city schools. None of the townships seem inclined to do so. Of course the Pembroke township will ere long—thanks to Lord Pembroke—have its own technical school at Ringsend; and as it has decided to levy the 1d. rate in support of this school, these remarks do not apply to it. But there are others which might do worse than take the matter into consideration.

LURGAN.—The linen cambric handkerchief and linen trade in this neighbourhood is doing pretty well as I write. A number of local manufacturers who had left off making any quantity of hand-loom goods have now put on a spurt, and are employing a lot of hands. Some of these are engaged at sheer cambric (linen), which in a good many cases is sent to Switzerland to be embroidered. Power-loom manufacturers are well employed. The output from hand-loom has increased considerably, and will be at its height now for some time. It is fully expected that owing to the shortness of hands there will be an increase in wages, which are very low. Linen handkerchiefs (of boiled yarns) are still slow, and are being produced very cheaply. Bird-eye diapers, damasks, and embroideries, all-linen goods, are in good request. Machine hemstitchers are now well kept going, and some places are working late.

### English.

**BRADFORD.**—There has been a decided improvement in business in this district during the past few weeks. The briskness with which wools have been selling at the London sales, and the higher prices realised, have given a very firm tone to the markets in Bradford, and wools generally have sold at advanced prices of from  $\frac{1}{2}$ d. to 1d. per lb. over those current a month ago, and holders of wools are asking a further advance. In the yarn branches machinery is very well employed, and from the number of orders on the spinners' books it is likely to be so for two or three months to come: thus the outlook for the new year is cheering. Much new business was offered spinners towards the close of the month, but unless accompanied by advanced rates they have invariably been refused, spinners preferring to work out existing orders before entering into new contracts, unless to their advantage. The piece branches, although not so busy as those of spinning, still are fairly well employed, and orders have been freely booked for some classes of goods of the fancy dress kind, whilst for the United States and Canada fairly good contracts have been secured for various kinds of coatings at moderately remunerative prices, and the outlook for next year is on the whole good, both for these and the different makes of Bradford dress materials.

**LEEDS.**—On the month's business, in nearly all departments, trade has shown a much more cheerful aspect than for some time past. The brisk biddings and higher rates at the London sales have given a firmer tone to the markets, and as a consequence merchants have been eager to place orders. Finer classes of worsteds have had an improved demand, as have the medium and lower kinds, but perhaps to a rather less extent. Serges have sold even more freely than they have during the past few months, although makers of them have been fully employed the greater part of the year; fancy makes of these cloths are eagerly bought up. Tweeds and chevots, in nearly all qualities, have met with increased favour, fabrics in good design, colour, and finish selling freely, both for home and export account. Mantling goods have shown an improvement. Cloths in various qualities, adapted for the ready-made clothing trade, have sold better than for months back, and hopes are entertained that this branch of business may, early in the year, be of a better character than has been the case during the present year. The demand for United States, Canada, and the Colonies has been of a decidedly improved nature, and with the result of the late Presidential election before them, manufacturers and merchants are hopeful of an early improvement in business with the United States.

**BARNESLEY.**—A quiet feeling has pervaded the linen trade of this district, and business generally has been quieter than has been the case for some months past. Damask table fabrics, with the exception of some of the cheaper kinds of goods, have been extremely quiet, the demand having been almost *nil*. In sheeting and other bed linens a fairly good business has been done, this being at present the most satisfactory branch of trade. In bordered, coloured, twilled, and other fine towels more has recently been done. In drabnets a fair inquiry has ruled, and the same may be said of huckabacks, but in these there has been a falling off when compared with the earlier months of the year. A moderate business has been done in domestic cloths, although some really good fabrics have recently been produced. Manufacturers generally are preparing for stocktaking, and are in many cases not eager to increase their engagements until the new year comes in, preferring to work contracts now on hand near a completion before entering upon new ones. Notwithstanding the rather quieter feeling pervading the linen trade, producers generally are hopeful of increased business early in the new year, and are sanguine of improved prices being the rule.

**MANCHESTER.**—As far as linens are concerned, there is not much likelihood that any transactions of importance will take place this side of Christmas in warehouse sales, although merchants are not indisposed to place new contracts on their own terms—which are not exactly reasonable terms, in view of the justifiable complaints of manufacturers regarding the increased cost of production both in the union and all-flax ends of the trade. During the past few weeks there has been a steady demand for household linens, amongst which goods of excellent quality are of course conspicuous. French-embroidered sheets, though not bought by the masses, are purchased frequently by those able to give the comparatively high prices asked; and Irish-embroidered goods have received a good share of support. During the past few years greater attention has been paid by the leading retail houses (some of which in the course of a twelvemonth can and do get rid of really large quantities of linen) to the dressing of what may be termed "linen windows." I have noted specimens of this branch of the window-dressing art frequently of late in many large cities and towns throughout the North and Midlands, and tradesmen are ready to bear witness to the fact that tasty displays of this kind have had a very favourable effect on their turnover. For purposes of this kind the fancy-coloured labels which Belfast houses now use have proved a real help to the artistic window-dresser, and the leading long-cloth makers in Lancashire have adopted similar methods for the purpose of increasing the attractiveness of their goods. Linen pillow-cases trimmed with lace readily obtain the preference over the plain article amongst buyers with long purses. The extra expense need not in any case be large, unless the shopkeeper happens to be a greedy individual, for Nottingham cotton lace can now be had by the yard for a few pence.

The remarks of your London correspondent recently regarding the importance of paying greater attention to the ornamentation of linen fabrics came at an appropriate time; for during the past few years I have noticed a remarkable increase in the quantity of fancy linens offered by such houses as Fandel, Phillips & Sons, who patronise French, German, and Swiss makers extensively. I notice that Ireland has not been altogether backward this season even in this branch of the trade. A Lurgan firm has placed on the market a very pretty hemstitched lawn apron, which sells wholesale at less than 10/- a dozen, and is really an attractive little article for the money. Retailers offer it at 11d. or 1/-. The sale of linen cambric and lawn pocket-handkerchiefs for presentation purposes has been quite up to the average this season.

In plain goods, the transactions of the month do not call for special attention. Shippers interested in the South American trade have not yet been able to equal the results which should be expected, and they are doing very little with Havana. Several young men who were sent out as travellers to Central and South America by local houses during more prosperous times cannot find engagements, and have been compelled to seek other channels of employment. The complaint is also made by travellers to those markets that neither Manchester nor Belfast salaries are as good as they were. This might perhaps be expected in view of the great shrinkage in the profits of South American shippers during the past few years.

A short time ago there seemed to be a prospect of an addition to the ranks of the makers-up buying Ulster cloths for cutting-up purposes. The Scottish Wholesale Co-operative Society has for some time been desirous of establishing an underwear and shirt factory, and recently the management asked the General Committee of the head wholesale society in Balloon Street, Manchester, whether support would be given to the project. The answer was, however, in the negative, although I do not know whether for that reason the scheme will be abandoned. The Manchester Society has several factories in various parts of the country engaged in the manufacture of woollens, ready-made garments, soap, biscuits, boots and shoes. The textile ventures have unfortunately proved the least successful of all, and with such an experience it was not likely that any guarantee would be given to the Scotch Society. It is a curious fact that merchants have often had reason to regret having embarked in manufacturing ventures. I have a case in mind in Manchester where a large firm of distributors, earning extensive profits on the business as a whole, have (if common report is to be credited) not had much ground for satisfaction at the results of the working of their mills. It is reasonable to suppose that the buyer for, say, the grey cloth department of a warehouse, would prefer an absolutely free hand in purchasing, instead of having the products of the firm's own mill thrust upon him. To a certain extent this may be the case. It has, however, often been said, in tones of complaint, that when mill and warehouse belong to the same firm, the one occasionally acts as a drag upon the other.

The transactions in foreign linen goods which have come under my notice during the month indicate that the market in Lille is much firmer, and that spinners have put quotations up. Linen and jute carpet yarns are very dull, owing to the large amount of unemployed machinery in certain branches of the trade, such as Brussels and Axminsters. I do not think that in this instance the complaints one hears are much exaggerated. Most goods belonging to the furnishing department, including linoleums, have undoubtedly been quiet for some time.

At the time of writing, the position of affairs in connection with the cotton trade dispute appears to distinctly favour the operatives. On 'Change, in the morning, I found very few signs of confidence amongst salesmen and others representing the Oldham limiteds, which are chiefly interested in the lock-out, or strike, as it is variously termed. With £1,000 a-week coming from Bolton alone in levies (in addition to a special grant of £20,000 from the same town), and a refusal of Bolton employers to close their mills and thus stop the flow of cash to the coffers of the Association of Operative Spinners, the prospects of a successful issue for the Employers' Federation are, in my opinion, poor.

The report that Messrs. Lewis & Co. of this city had taken large premises in Bradford is denied. Liverpool, Manchester, and Birmingham are at present the only places where the firm have establishments. It is considered strange that the large manufacturing towns of Yorkshire have for so long been neglected.

**LONDON.**—Since my last report the tone of the London market has remained practically unchanged, so far as the general trade of the city is concerned; but in the cotton end stocks on hand have been moving out freely, in anticipation of the Lancashire strike being prolonged longer than was at first anticipated. Already some of the houses have worked their heavy stocks down lower than they have been for many years, and there is evidence that the retailers, in view of a scarcity of certain makes, have been stocking themselves beyond ordinary requirements. As might be expected, there has been a steady advance of prices all round, and German cotton spinners are taking advantage of the weakness of the British supply. Three well-known German houses have booked large orders during the current month, and their agents have informed me that they are steadily advancing their lists. What business is being done in the general trade is restricted to fancy goods, and to the purchase of cheap lines for the usual sales at Christmas time. What the city has suffered most from during the last few weeks has been the changeable character of the atmosphere. A



run of settled winter weather would have made an immense difference in the returns; but at the time of writing, the advices from different parts of the country seem to indicate the near approach of something more seasonable. Shareholders in the various city companies are looking forward anxiously to the results of the half-year, and it is to be hoped that they will not be disappointed if, unhappily, there should be a reduction in the dividends of some companies; for it is a well-known fact that not for a long period have more orders on hands been cancelled than during the current six months, chiefly export orders, while the losses through bad debts have been serious in one or two cases. At the present time, the liquidation of some three or four export houses in the Australian trade, all of importance, is sufficient evidence of the state of that particular market; but the impression in the export trade is that we have now touched bottom, and that with a promising outlook in the agricultural and grazing districts the tide will turn with the New Year. Business in Milk Street is being pushed with all the energy which the agents can command, and, as the consequence, the display of Irish linens, cambrics, &c., in the West End and suburban houses forms one of the shop attractions at the present season. Nearly all the leading houses have set apart a window for linen goods. The demand, however, for all classes of goods is weak, and the houses are on the look-out chiefly for bargains. In handkerchiefs, a few good lines were booked at the end of last month for the export trade, principally South American indents. There have been no changes of any importance to chronicle during the month, but it is stated in the city that the beginning of the New Year will see a few retirements. We are all looking out for more prosperity in the coming season, in which, it is to be hoped, the Belfast market will participate.

### Scotch.

**DUNDEE.**—This market has been characterised by continued quietness of late, and so far as the linen trade is concerned, no improvement is noticeable, and approaching the close of the year there is not much expectation of a recovery, pending stocktaking. Manufacturers, however, are firm in their ideas as to prices. *Yarns*—A moderate business kept up in yarns, the finer counts both of wet and dry spuns having most attention. *Flax*—A good demand maintained for flax, and prices show a further advance on the month.

### Continental.

**LANDESHUT YARN EXCHANGE, 7th December.**—Although the Exchange to-day was not so well attended, flax-yarn and tow-yarn were in great demand; but spinners at present are rather keeping back, owing to the prices for new flax being much higher than last season. Therefore, only a few contracts for line-yarns, which (especially in finer numbers) are very scarce, were completed at higher prices. Tow-yarn keeps very firm, and for new contracts, also, higher prices are asked. The power-loom hereabout are well occupied, and hand-loom now give full production. Next Exchange on 4th January, 1893.

### United States Market.

(From our Special Correspondent.)

NEW YORK, November 29th, 1892.



UPON the face, the great issue has been decided. The party pledged, not to free trade, but to a revised and moderate tariff, has succeeded in carrying the National elections, and the stamp of disapproval has been placed upon the M'Kinley Bill. It is neither the time nor the place to discuss whether the intelligence of the nation was well weighed in the balance that fell so heavily to the adverse side of Republican politics: the mercantile community, which should be the arbiter of its own fortunes—and upon which the responsibility of final judgment sits so heavily in a crisis of the nature just decided—was far from being a unit in the argument. This leaves the debateable unknown quantity—the greatest good for the greatest number—a matter for politicians to decide; for, after all interests have been reviewed, those in power will favour the *pros* rather than the *cons*—as was the case with Mr. M'Kinley and his committee, when, in the face of arguments from men of their own party, they handicapped linens in favour of an embryo industry that in two years of "experience" has succeeded in producing nothing better than what some of our Franklin Street importers term "tow crashes."

In carrying out their pledges to the country, the new authority must act as soon as circumstances will permit. The talk of an extra session of Congress, following the inauguration of Mr. Cleveland on the coming 4th of March, to undertake the revision of the tariff, is regarded as moonshine by many, as so many other matters are in the way. It is to be hoped, however, that, in the department of linen goods, the paragraph of the M'Kinley tariff in section 371, which provides that, on and after January 1, 1894, a rate of 50 per centum *ad valorem* shall be imposed upon linen cloth counting more than 100 threads to the square inch, both ways of the cloth, shall be declared null and void before the time limit shall

have expired. This grade of cloth now pays the old rate of 35 per centum, while the counts below are experiencing the beauties of the 50 per centum impost—the exemption was made, practically, in favour of 4/4 linens. It was hoped that the American industry would "get there" by 1894. But it has not even obtained a "place" thus far in the meeting; and of the sanguine expectations that made the noises two years ago, hardly an echo remains.

4/4 linens have been rather dull in demand throughout the present month. This was largely due to the semi-annual stocktaking which went on at Troy, and throughout the shirt trade generally, from the beginning of the month. All the odds-and-ends were cleared up, and no new stock was taken in, except where necessity demanded. December will open the channels again, and, as extensive preparations are in vogue for spring coming, Troy, particularly, should require a good volume of supplies. Prices, in the main, should be pronounced firm; but certain lots slip off now and then without a jealous regard to market standards, as has already been reported in these truthful letters. Troy has closed the best twelve months of her collar-making history. It was not so much a question of the ability to sell as it was the ability to keep abreast of orders; and rather than be caught short-handed, as they were last spring, manufacturers are exhausting all their resources in order to be well forward for the coming season. Linen importers will have to depend upon the collar trade more than ever for their output of 4/4 linens. Shirt makers have, except for the limited "dress shirt" demand for society's winter wear, about given themselves up to the woven and printed colours of Oxfords, Madras, and percale cottons. These are the "goers" for spring, summer, and autumn wear. It is little short of a craze; and the extreme fad of 1893 will be a "half-launders" *négligé* made of the cotton fabrics described—which means a shirt made of the one textile throughout, with no bosom except a centre plait, and with attached collars and cuffs stiff laundered. Linen isn't in it.

We used to write "L. C. Handkerchiefs," but cotton has the better of that field too, and linen cambric is no longer king. Between the never-ending "closing out" of lots at any price, and the muddle over the Swiss and Irish factions of this once-wholesome trade, the man who would write with a sanguine pen must wait for a good breathing spell. W. H. Wardell has retired from the management of Thos. Bell & Co., and will undertake the handling of the account of W. C. Wolseley, of Ballymena. There will be a change in the firm of Duke, Hanna, M'Mahon & Co., and the firms of Pincus & Ayres and Wilson & Findlay are new-comers. Mr. Eccles has retired from the firm of Glendinning, M'Leish & Co.

### PHILADELPHIA TEXTILE SCHOOL.

THE success of the Philadelphia Textile School has long been beyond the doubtful point, but the progress made by the institution, and its growth in popularity, as evidenced in this year's attendance of scholars, has surprised even those who are its warmest supporters, and most familiar with its history and prospects.

Only eight short of a hundred scholars are being taught the studies, both practical and theoretical, embodied in the curriculum of the school. These ninety-two students were lucky in their applications, as in the six weeks since the beginning of the present term about thirty-five applicants for membership have been turned away because there was absolutely no room for them.

#### THE SCHOOL'S CLASS-ROOM.

This is one of the three important departments of the institution. It is well lighted, and furnished with elegant charts to assist the teacher in conveying his thought to the pupils, enabling them to get clearly and quickly a comprehensive grasp of the work under consideration.

It is presided over by three of the faculty of the school—Director E. W. France, a graduate of the Pennsylvania Museum and School of Industrial Art, and formerly of the Conshohocken Woollen Mills; Assistant Director Bradley C. Algeo, instructor in textile design; and Myrtle D. Goodwin, instructor in freehand drawing, design, and colour harmony.

This latter department, called the department of colour combination, has been one of the greatest of the successes of the school. It was only introduced a year ago, and was devised to overcome one of the great drawbacks under which American textile workmen have suffered, their lack of appreciation of harmonious colouring. In this respect there is room for great improvement, and they have much to learn. Fabrics from the French are celebrated the world over for artistic effects, and with the French as a nation colour harmony is seemingly an intuitive gift. A fabric may be first-class in quality and design, but it is the way the latter is worked out in colours that has the most influence when it comes to a sale of the goods. The boys are first taught what colour is, and then by successive steps how to get harmonious effects. They are taught how to mix colours to make all the various shades and tints, and it has been clearly demonstrated in the work of the students that at the end of the course they are capable of arriving at very artistic results, no matter what the fabric, and with a definite knowledge of what they are working on, and what effects to expect.

Besides this course in colour study, in the class-room is conducted all the theoretical work of the school. In the work of the first year students this embodies instruction to the fullest extent in the studies implied in the following headings: General principles of the structure of fabrics; explanation of drafting; weave combination; yarn calculations; cloth analysis; cloth produced by using an extra filling or an extra warp; instrumental drawing, and freehand drawing and colour work. For the second year is taught the value of a knowledge of double cloth; pile fabrics; gauze fabrics; the Jacquard machine; principles of the card stamping machine; in-grain carpet; advanced calculations; instrumental drawing, and freehand drawing and colour work.—*Textile Record.*

### Obituary.

ROBERT BARBOUR, well known throughout this country as one of the pioneers of the linen thread industry in the United States, died of apoplexy at his home, at Paterson, N.J., on Friday, November 25th.

Mr. Barbour had just returned from Europe, and was supposed to be in the best of health up to the time of his decease. He was about 64 years of age. He will be missed by a very large circle of friends and acquaintances, by whom he was held in the highest esteem.

Mr. Barbour was the president of the Barbour Flax Spinning Company, of Paterson; a member of Barbour Bros. & Co., of No. 218, Church Street, this city; owner of the Allentown Flax Spinning Company, of Pennsylvania; and a member of the firm of William Barbour & Sons, Limited, of Lisburn, Ireland. These companies practically control the flax-thread trade, and Mr. Barbour represents the third generation of the family which started the business early in the century. He was a son of William Barbour, and after being educated at his home in Belfast, came to the United States with his brother Thomas, in 1864, to establish a branch house. He was the largest individual property owner in Paterson, and his wealth is estimated at about \$10,000,000. He was a Republican in politics, but never took an active position in his party. He leaves a widow, one son, and four daughters.—*Dry Goods Economist.*

### RECIPES.

THE following is a good finish for linen buckrams:—22 lbs. farina, 16 lbs. starch, 15 lbs. China clay, 15 lbs. barytes, 5 lbs. tallow, boiled up in 30 gallons water; then add, boiling,  $\frac{3}{4}$  lb. soap, 1 lb. tallow, 1 lb. coconut oil,  $\frac{1}{2}$  lb. stearine,  $\frac{1}{2}$  lb. soda crystals (Brunner's), and 2 $\frac{1}{2}$  gallons water; makes 50 gallons. Run through 3-bowl starch mangle; dry and calender. Use warm. Stiffening can be increased at will on stiffening mangle, and additional starch put in. A capital finish, if properly carried out. The best stiffening agents are, however, Epsom and Glauber salts, which prevent mildew, etc. The use of glue is seriously affecting the sale of buckrams and other heavy linens.

Another recipe is—4 $\frac{1}{2}$  lbs. soda, 17 $\frac{1}{2}$  lbs. white wax, 80 lbs. French chalk, 160 lbs. farina, 500 lbs. starch. In mixing, stir the starches with the water, then add the soda, then the wax, and lastly the French chalk. Makes 500 gallons. Hot calender twice. This gives a very stiff and strongly-lustred finish.

Castile soap and glycerine may be used as follows:—66 gallons water, 24 lbs. wheat starch, 6 $\frac{1}{2}$  lbs. hard feel and 11 lbs. soft feel Castile soap, 17 gills glycerine 28°B; boil all up once only, starch well stirred with water, the Castile soap cut in fine shreds added. Water must be soft, or lime soap is formed; should water be hard, add nearly 9 ozs. crystallised soda, and boil the water; after boiling, the finish is rubbed through a sieve and used warm. When lustre and filling are required, it is best to use French chalk rather than China clay. A very simple mix is 25 lbs. starch and 50 lbs. farina, boiled up with water to 65 gallons of mixture. This is suitable for a light weighting.

Notice remarks under the head of "Finishing and Farina" in our article on "Bleaching" in October issue.

**BLACK DYE RECIPE FOR JUTE.**—A cheap bright black suitable for very strong thread is obtained by filling a vat capable of holding about 120 gallons two-thirds with water, in which 5 lbs. of solid extract of logwood is dissolved and  $\frac{1}{2}$  lb. of extract of fustic paste, bringing the liquid to a boiling point; the steam must then be shut off and the material entered, the bundles opened (not the skeins), and the whole weighted with boards to prevent the goods from rising. After twenty-four hours the jute is taken out, packed in heaps beside the vat, and repacked two or three times during another twenty-four hours, so that every portion of the material may be exposed to the air as far as possible. During this exposure, dissolve in the logwood bath 8 lbs. coppers,  $\frac{1}{2}$  lb. bluestone, and add a little water if found necessary; bring to a boil, and place the material in for other twenty-four hours; then rinse and dry.

### Book Notices.

*The Season.* This excellent Journal of Fashion maintains the high position it has long held as a leader in this line. The valuable information in regard to textiles, in their relation to dress and household economy, marks it out as an original and trustworthy guide. The illustrations and patterns for dress, as well as embroidery designs for linen and fancy work, are profuse and most artistic.

*House-lighting by Electricity.* In the near future we are promised a great luxury in the application of electricity to domestic purposes, at a price which will compete with gas. The rapid progress made of late years in the way of solving many practical difficulties which stood in the way of utilising this subtle force has been most gratifying; so that it may safely be assumed we are within measurable distance of realising all the advantages of this splendid illuminant, and at a price which will bring it within reach of the masses. We understand that Mr. Angelo Fahie, M.I.E.E., of Dublin, is publishing a work with the above title giving a large amount of information to those desirous of adopting this light, and we have no doubt, in the hands of such an experienced engineer, the subject will be carefully and practically treated.

*The Mining, Manufacture, and Uses of Asbestos.* By J. Alfred Fisher. A very useful pamphlet, giving full information regarding an article which has acquired very great commercial importance in the present day, owing to its extensive use by mill-owners, machinists, manufacturers, and all who employ steam in their works. In addition to its application to machinery, there are

many other purposes for which it has been found very valuable, such as for joint and gland packings, the manufacture of mill-boards, and to make fire-proof paint, &c. The pamphlet is a reprint of a paper on the subject read at the Institute of Marine Engineers. Mr. Fisher is Managing Director of the United Asbestos Company, Billiter Street, London, from whom the pamphlet can be had.

### Chemicals and Dyes.

(Special Report by Messrs. SADLER & Co., Ltd., Middlesbrough.)

THERE is great competition for Soda contracts for next year. Both Caustic and Soda Ash are quoted 10% to 15% lower, while Sulphate of Soda is still unsaleable. Bleaching Powder keeps moderately firm, and business for next year is reported at £7 5s. The Ammonia products are looking up well, and Sulphate is at least 10/- better than it was a few months ago, whilst Chloride and Carbonate are showing even better than this, relatively. Nitrate of Soda has improved wonderfully since it has become generally known that shipments have largely decreased. Bichromes keep in fair request at the higher prices. The same remark applies to Sulphate of Copper. Oxalic Acid sells freely, and price is maintained. A good deal more is being done in the dye market, the low prices of Aniline, Alizarine, and their derivatives having found a more extended market. Tar products are slightly better, but dyers' chemicals generally, with the exceptions above mentioned, are dull, with a tendency to lower prices. Prices:—*Dyes.*—Alizarine, 8d.; Aniline Oil, 6 $\frac{1}{2}$ d.; Aniline Salt, 6d.; Magentas, 2/- to 3/-; Scarlets, 1/3; Chrysoidine, 2/-; Blues, from 3/-; Picric Acid, 10d. *Ammonias.*—Liquid Ammonia, 1 $\frac{1}{2}$ d.; Carbonate of Ammonia, 2 $\frac{1}{2}$ d.; Muriate of Ammonia, £16 to £22; Sulphate of Ammonia, £10 2s. 6d. *Alkalies.*—Bicarbonate of Soda, £7; Caustic Soda (77), £10 10s.; Soda Ash, 1 $\frac{1}{2}$ d.; Caustic Potash, £19; Sulphate of Soda, 25/-; Soda Crystals, about £3. *Sundries.*—Tartaric Acid, 1/4; Citric Acid, 1/8; Oxalic Acid, 3d. less 5%; Tin Salts, 5 $\frac{1}{2}$ d.; Sulphate of Copper, £14 15s.; Bleaching Powder, £7 10s.; Borax, £27; Nitrate of Soda, £8 15s.; Carbolic Crystals, 6d.; Epsom Salts, £3.

### Selected List of Applications for Patents relating to Textile Fabrics.

Compiled from the Official Records, by Messrs. W. P. THOMPSON & Co., Patent Agents, of 6, Bank Street, Manchester; 6, Lord Street, Liverpool; and 323, High Holborn, London, W.C.

G. E. DONISTHORPE and T. BURROWS, London, No. 19,163.—"Improvements in machinery for scutching flax, hemp, rhea, jute, or other like fibrous stems or plants." 25th October, 1892.

W. P. THOMPSON & Co., Patent Agents as aforesaid, 6, Bank Street, Manchester; Liverpool, and London (communicated by G. H. Voigt, Germany), No. 19,635.—"Improvements in or connected with reeling apparatus, or machines for yarn-winding, applicable also for other purposes." 1st November, 1892.

A. MILLVEIGH, Dromore, Co. Down, No. 19,939.—"Ureka silk finish, for producing a silky finish on all classes of textile fabrics." 5th November, 1892.

E. F. FURTADO, London, No. 19,942.—"A new material for the glazing of linen and kindred fabrics." 5th November, 1892.

G. S. V. GODFREY, Hastings, No. 20,104.—"An improved linen shirt." 8th November, 1892.

H. WOLFF and H. DEDE, London, No. 20,224.—"Improvements in machines for breaking and scutching flax and the like." 9th November, 1892.

R. DAVISON, Glasgow, No. 20,258.—"Improvements in machinery for breaking or treating flax and similar textile materials." 10th November, 1892.

F. MEGARRY, Belfast, No. 20,536.—"Improved method for attaching frills or frilling to ladies' skirts or blouses." 14th November, 1892.

W. SCOTT and J. MACKIE, Belfast, No. 20,561.—"Improvements on saddles and stands on wet spinning frames." 14th November, 1892.

W. A. ROBERTSON, Newtownards, Co. Down, No. 20,618.—"Improvements in fancy stitch sewing machines." 15th November, 1892.

J. BARBOUR and T. MIDDLETON, Belfast, No. 20,633.—"Improvements in apparatus for adjusting the thread plates of spinning frames." 15th November, 1892.

### SPECIFICATIONS PUBLISHED.

The specifications of the following patents have been printed and published during the month, and copies thereof may now be obtained at the uniform price of 1s., which includes postage.

1891.

G. E. DONISTHORPE and T. BURROWS, London, No. 17,692.—"Improvements in machinery or apparatus for combing wool, flax, china grass, silk waste, or other like fibrous materials." 16th October.

G. E. DONISTHORPE and T. BURROWS, London, No. 20,509.—"Improvements in machines for combing wool, flax, tow, and other like fibrous material." 25th November.

J. ROBERTSON, Dundee, No. 21,331.—"Improvements in and connected with spinning and doubling machinery." 7th December.

J. P. STRANGMAN, London, No. 21,725.—"Improvements in means for applying liquid to rovings in spinning flax and other vegetable fibres." 11th December.

1892.

W. P. THOMPSON & Co., F.C.S., M.S.I.M.E., Patent Agents as aforesaid, 6, Bank Street, Manchester; Liverpool, and London (communicated by S. B. Allison, U.S.A.), No. 14,528.—"Improvements in or relating to apparatus or machines for breaking, washing, or otherwise treating vegetable fibres." 11th August.