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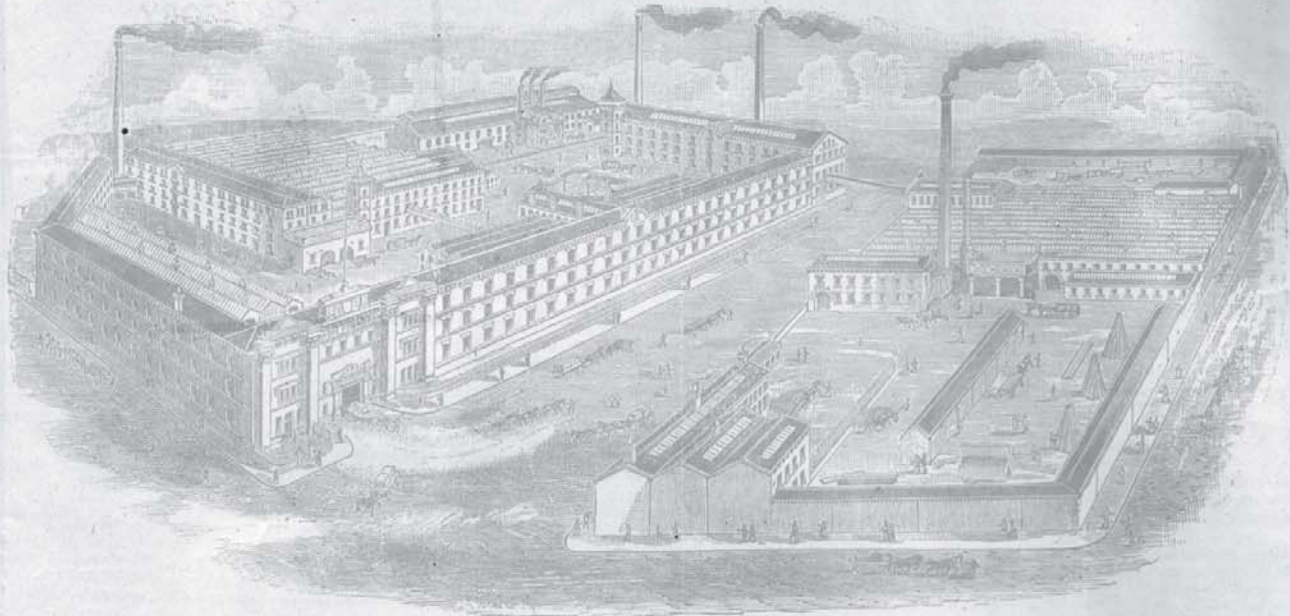
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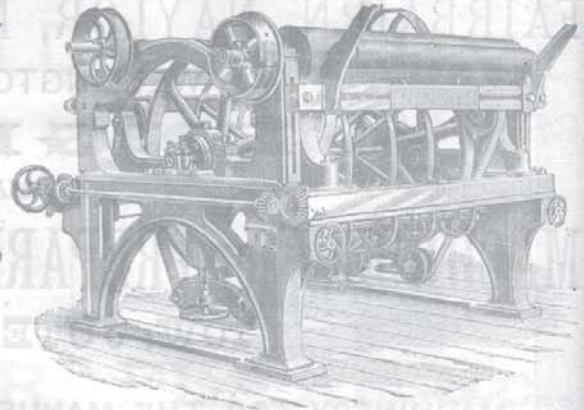
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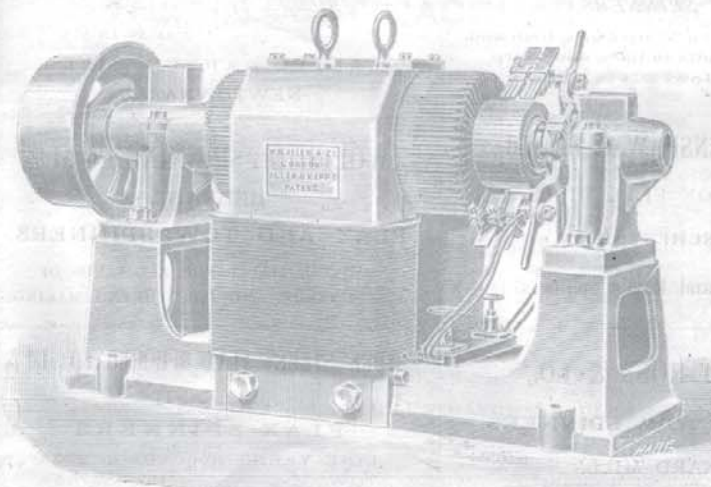
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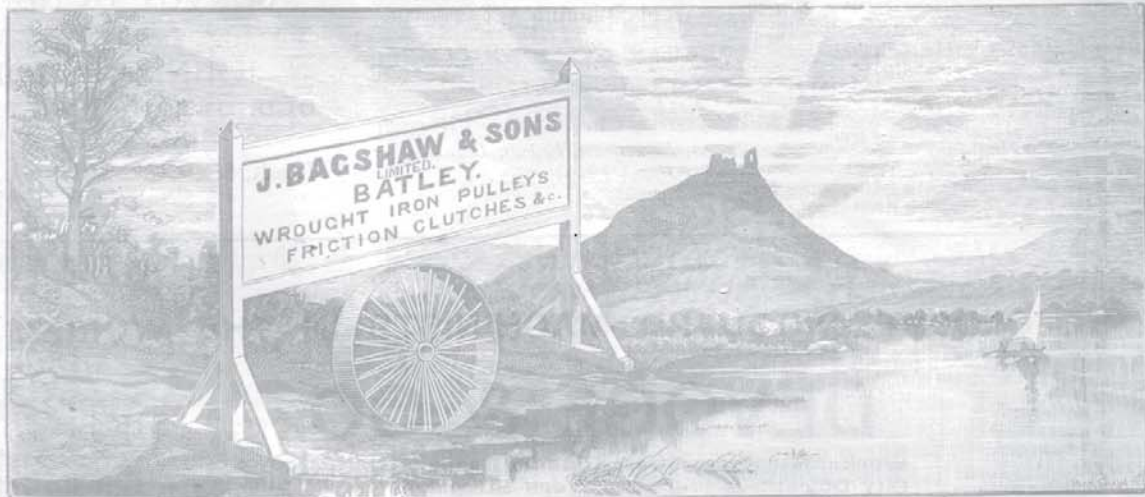
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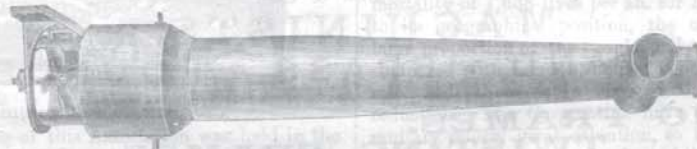
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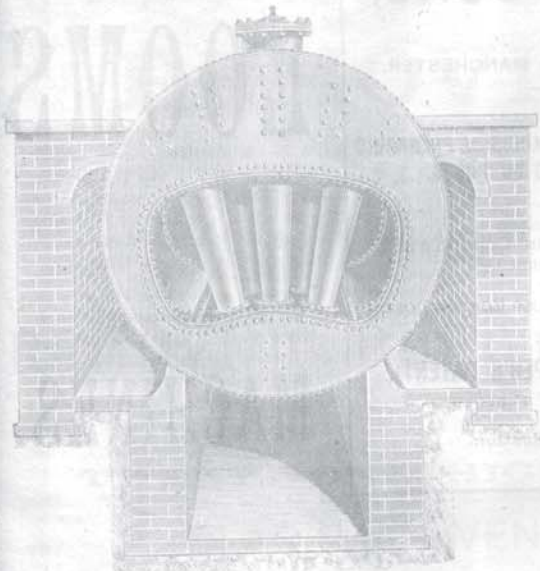
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The Irish Textile Journal,

WITH WHICH IS INCORPORATED

The Belfast Linen Trade Circular.

[REGISTERED.]

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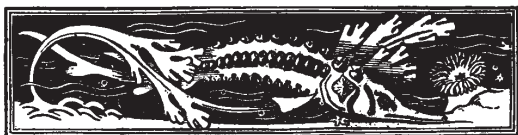
Correspondence and items of interest bearing upon the Textile Industries, Technical Education, or other questions treated in this Journal, are solicited. Market reports, or notes respecting the position and prospects of our Irish industries, will be specially acceptable. Correspondents should write briefly and on one side of the paper. Foreign readers are invited to send reports, and to point out any facilities which may exist for promoting the interests of Irish manufacturers.

The *Irish Textile Journal* is published on the 15th of each month. Yearly subscription, including postage, 11/6. Subscriptions payable in advance. Free sample copy sent to any address. Advertisers will find the Journal an excellent medium for announcements suitable to its pages. Terms may be known on application.

All remittances to be made payable to the Proprietor, F. W. SMITH, 7, Donegall Square East, Belfast.

The *Linen Market*, published every Saturday, at the above address, deals exclusively with the Irish linen trade in all its branches. Annual subscription, £1 1s. The *Irish Textile Journal* and *The Linen Market*, if ordered at the same time, will be supplied by post for £1 4s., or if within the City delivery for £1 2s. 6d., per annum.

The *Home and Foreign Linen Trade Directory* is now ready. Limp cloth, 2s. 6d.; boards, 3s.



The Ulster Sanitary Association.

THE second annual meeting of this Association was held in the Committee-room of the Chamber of Commerce on the 24th ult., and it is gratifying to find that marked success has attended the Society, and that the public are beginning to appreciate its value. It is quite evident—to use the words of the Report—that it does supply a pressing want, and that, without disparagement to either architects or tradesmen, there was need for the services of an independent specialist in sanitary matters. It is quite enough to read the engineer's report to be fully convinced of this, for he says—"My experience in Ulster, though short, has been wide and varied, and I am sorry to state that the insanitary condition of the buildings inspected proves without doubt that a terrible state of matters exists, calling for urgent attention. Poisoned sewer air is, in hundreds of cases, simply 'laid on' (as our gas or water is) into houses from cess-pools and sewers; sickness and death from preventable causes are certainly incurred; yet action is not taken. The malign influences are unsuspected by most, simply because the causes are invisible; and the majority of householders dwell in peril, and many suffer sickness and bereavement which might easily be prevented. The mortality table shows how prevalent and fatal are the preventable diseases; but general apathy prevails, and in many cases a false security is given by the mere assurances of the landlord or agent that the sanitary arrangements are perfect, and no demand is made for the production of a certificate from a competent authority." The report of the engineer is deserving of careful study, and we would be glad to know that the

Council of the Association took steps to distribute thousands of copies of it throughout Ulster, for it deals with a subject of paramount importance to everyone.

The National Registration of Plumbers.

Following the meeting of the Sanitary Association was the annual meeting of the District Registration Council for Ulster, which was held in the Town Hall on the 25th ult. The Report as a whole is satisfactory, although the object for which the national movement was established has not been as widely supported in Ulster as it should. The number of registered plumbers has increased; but there are still a great many throughout the province who have stood aloof. However, the time is coming when it will be compulsory for men who set up as sanitary plumbers to be registered, in order that the public health may be much more efficiently safeguarded than it is at present from the serious results of bad work in this line done by incompetent tradesmen. The matter is too important to be allowed to remain any longer in its present condition, and the Report of the Sanitary Association shows conclusively the need of a far higher standard of work which must be aimed at in the future. This reform will be good for the trade as well as for the public, and should be heartily supported by all who have given the matter any attention.

Belfast Health Society.

Last month, under the auspices of this vigorous Society, the public had an opportunity of hearing an excellent lecture on "Underground Air in Relation to Health," by Sir Charles A. Cameron, M.D., of Dublin. As the result of laborious calculations, he stated that "in twenty-eight of the largest towns of England the deaths per thousand persons living during the last ten years were four per thousand in excess of the rate in the rural districts. In some towns the rate was nearly one-third more than in the country. The death-rate in Belfast during the decade 1881-90 was, as recorded, 24.5 per thousand; but corrected for age and sex distribution, it was 28.1. In 1891 the rate was still higher, namely, 25.5 recorded, or 29.3 as corrected. When we consider that in London the corrected death-rate is about 23 per thousand, and more especially when we find that only 17 persons per thousand die in the open country, it will be seen that Belfast, and indeed Dublin, have to accomplish much more in the way of sanitary improvement than they have yet achieved." It was not pleasant to hear from so high an authority that Belfast occupies so unenviable a position in respect to the death-rate as compared with other towns in the United Kingdom; but it should stimulate us to use every means to combat such a serious condition of things. In round numbers the difference between the death-rate of Belfast and London is six per thousand, which, multiplied by 273,000, makes an excessive mortality of 1,638 lives per an. for Belfast. Of course, having regard to its geographical position, the nature of the employment of a large proportion of the people, and the very small population factor as compared with London, Belfast is never likely to show as low a death-rate; still there is in six per thousand ample room for a large reduction. The Corporation have of late years given the subject of sanitary reform great attention, so that we may reasonably expect a very great improvement in the public health in the near future. The Water Commissioners also have ably and efficiently worked in the same way, so that Belfast might be supplied with an abundant and pure water-supply. To aid these governing bodies we have now these three excellent organisations—the Sanitary Association, the Registration Council, and the Health Society—all co-operating in a noble cause, that of striving to reduce the excessive waste of human life in Belfast.

The Irish Linen Trade in the last Century.

We have pleasure in drawing attention to the announcement in our advertising columns, that by kind permission of Messrs. J. N. Richardson, Sons & Owden, Limited (whose extensive warehouse and works we illustrate this month), we have been able to reproduce, by photography, the series of old engravings in their possession, representing the Irish linen trade in the last century. The photographs are excellent, and we feel sure that many of our readers will be glad to have a set of them as an interesting memento of the linen trade in the olden time. The number struck off will be limited, and orders will be executed in rotation, as expeditiously as possible. Prices, £1 5s. to £2 2s. per set of twelve.

The Belfast Technical School.

The Finance Committee of the Corporation have recommended that £250 be given to the school this year, which is £50 more than last.



The Need of United Effort in the Industrial Regeneration of Ireland.

WITH an excellent and remarkably cheap handbook, which was compiled by the Countess of Aberdeen, and published as a Guide to the Women's Industries Section of the Edinburgh International Exhibition of seven years ago, there was bound up an outline map of Ireland, showing, by dots of different colours, the distribution of cottage and home industries throughout the island. *Red* stood for homespun and tweeds, and was most frequently met with. *Green* marked lace and crochet, and came next in order. *Blue* represented knitting, and *yellow* denoted embroidery and sprigging, both being about equal in point of numbers; and *brown*, of which very few patches appeared, told of plain sewing. There was not any attempt to indicate the relative value of these pursuits—which, indeed, would hardly have been possible; but it was good to know and instructive to notice what occupation afforded the widest employment, and appeared to offer the brightest prospects of success; although, at the best, the blank spaces between these significant spots of colour were grievously extensive. But if a map on similar lines could be prepared to show the instances and districts where individuals have, at one time or another, endeavoured to develop natural endowments, to provide work, or promote the well-being of the people, how the bright colour, which alone could properly be used to signify such large-hearted efforts, would spread over all the land, and, especially in the South and West, leave little of it white with neglect.

There cannot be much doubt that these emergency methods have been not only admirable in motive, but sound in policy. Although they were, in many cases, works of necessity, they fitted times and circumstances to a nicety. As a matter of literary interest, there are few passages upon Irish concerns which can compare with that in which the first Lord Lytton, while still a young man, put forward in a few short and pithy sentences his plan for the settlement of the Irish problem. Now turn to Ireland, he wrote—

"Don't ask too much from landlords. It is impossible from their means. Provide employment that brings profitable return to wealth of country. Purchase lands for government, or encourage companies for that purpose on a large scale, and in every district. Introduce all improvements that can increase demand for labour. Lay the foundations of orchards in the rich valleys. Each small owner, some fruit trees. Spread the cultivation of flax. Introduce hops. Try the mulberry and silk-worm. Trust in all these the irresistible effect of example. Industrial schools everywhere. Put political questions at rest for a while. Let the Church sleep. Say boldly, 'Whatever our opinions on these matters, we must first give bread to the people. We must lay the foundations of those industries and habits on which national happiness depends.' In proportion as Ireland thus advances in industrial prosperity, the difficulty of adjusting religious differences will be diminished. In proportion as you increase the wealth of Ireland, you will be able to do that which is the only means of meeting the difficulty without straining the conscience of England. You can tax the Irish people for the maintenance of their own ecclesiastical establishments. Be firm in putting down crime. Go back to analogous states of society. Divide into districts. Make each district responsible for the crimes committed in it."

Into the portions of this scheme which belong more properly to polemics or politics we have no disposition to enter, although there is considerable and increasing difficulty in marking off boundaries between state and industrial affairs. But upon the main lines of these shrewd suggestions we are perfectly safe, and can express our unqualified approval of them. The first of all Irish necessities is *Work*, and the next—only second in point of time, not of importance—is *Industrial Education*, by which *Work* may be made efficient and effective. *Work* meets present needs, *Education* those of the morrow, and out of *Industrial Education* would grow those localised industries which would provide more *Work* in time to come. The two would go hand in hand—would react upon each other—would complete a circle—would be the coupled driving-wheels of prosperity—would, under any possible

figure of forceful combination, bring employment, activity, and contentment after them. The support of influential names has been given, time after time, to these imperative means of improvement, so that it would be possible to quote opinions in support of them by the yard. "The subject has long been prominently before the public," wrote Jonathan Pim, so long ago as 1848, "and its importance, as a means of elevating the character of the people, is universally recognised." Since then our estimate of *Education* has been greatly enlarged, without anything like a corresponding advance in its application. Professor Sullivan, on a memorable occasion, said that technical instruction was the first thing to be thought of, and explained that, unless capitalists established factories and imported labour to fill them, there was little hope of any fresh industries in Ireland, unless they grew, as an acorn becomes an oak, out of cottage beginnings. And yet little or nothing is done to carry out this policy except by personal and private enterprise. There is occasion, unfortunately, to show up over and over again the shortcomings of our educational system in respect to industrial training, and to insist upon the absolute necessity of utilising the waste labour resources of Ireland, not only for the increase of prosperity, but for the formation of character. It is here we are so terribly behind, and for a country that depends so greatly upon agriculture, it is sad to think of the dense ignorance that extensively prevails in regard to the proper cultivation of the soil.

It would be, in some lights, a delightful and inspiring book, if a full, true, and particular account could be given of the various attempts made to institute rural industries in Ireland. All the manifold enjoyments and advantages of biography would belong to a volume which detailed the struggles and difficulties of, not one life, but many; while there would be, in addition, the interest which biography so rarely offers—the record and lessons of failure. The subject would reach much further, both in time and effort, than many people would imagine. Linen itself owes something to the care and foresight of Sir William Temple, although it is something over two centuries ago that he gave attention to it; and before him the Duke of Ormonde was busy with schemes of industrial development. The work of the Royal Dublin Society and of the good old Linen Board would deserve honourable mention, so far as either has fostered minor and local manufactures, and the merits of both bodies would perhaps be more freely recognised. As for the scope of experiments, that would cover almost, if not all, the resources of Ireland. The entire range of textiles, and well-nigh every other branch of industry, has been tried, as well as the silk-worms and hops which Lord Lytton had in mind. The small things of farming, such as eggs and rabbits, bees and goats, have been carefully weighed; and the crumbs of commerce, such as straw envelopes for bottles and paper-bags, tapes and pins, tobacco pipes and stools, butter and bog oak, have now and again been sedulously swept up. More than once great hopes have been reposed in straw, particularly for the making of plait for hats and bonnets; and one practical application of this idea by the ladies of Sir Neal O'Donel's family, in the neighbourhood of Newton Pratt, County Mayo, attracted a considerable amount of attention in the early years of this century. Osiers and basket-making have had their advocates, too; and peat, either for fuel or litter, and once for candle-making, has been always to the fore. Fishing, by the shoal or to the picking of periwinkles, has been uppermost at one time, timber and reforestation at another, and then, perhaps, there was a turn at transport in general for a change. Lord Palmerston, among others, believed in bog reclamation, and, unlike many others, not only put faith, but money and pains into it. Banks of another sort have been criticised freely, and, among other economic reforms not a few, a new banking system for Ireland has been demanded. About 1821, the Earl of Carrick founded an association for the general purpose of encouraging industry, and before long "a regular weekly market of the flax manufactured was held in Kilkenny." Another flaxen endeavour, on different lines, is mentioned in Arthur Young's *Tour in Ireland*; and, that being published in 1780, it is said that some sixteen years before Mr. Andrew Trench, of Galway, "imported the first cargo of flaxseed of 300 hogsheads, and could only sell 100 of them." But it is to be noted that this enterprise, unfortunate as it appeared at the outset, seems to have been the beginning of good things for Galway. When Arthur Young wrote, a poor hundred of hogsheads of seed were not nearly enough for the necessities of the neighbourhood, but from 1,500 to 2,300 were required annually. And then follow fuller particulars to show what grew out of such a modest and unpromising start. "Twenty years ago," it is written, "there were only 20 looms in Galway, now there are 180. They make

coarse sheetings, seven-eighths wide, at 9½d. to 11d. a yard; dowlas, 28 inches wide, at 7d.; Osnaburgs at 7d. also. There are eight or more bleachgreens in the county, but they bleach, generally speaking, only for the county consumption. The great bulk of the linens are sent green to Dublin. In the town and neighbourhood of Lochrea there are 300 looms employed on linens that are called Lochreas, of 28 inches in width, which sell at 7d. a yard. All the flax worked in the county is, generally speaking, raised in it. The yarn spun is pound yarn, not done into hanks at all. The linen and yarn of the whole county has been calculated at £40,000 a-year."

These few details will show what an animating and impressive book might be made upon the subject we have indicated; and other intimations of what has been done in several directions will give some idea of what a big book it would be, and what a brightly-coloured map might be filled in to furnish a frontispiece for it. Not that we have by any means exhausted the materials which would be at disposal for such a volume. For one thing, it may be noticed that no mention has been made of all the relief operations, by associations or individuals, which are at present in working order. For good and sufficient reasons, complete enumeration of these is, for the time being, withheld. For another notable omission, none of the names which make the history of lacemaking in Ireland glow with good works, from the days of Lady Arabella Denny downwards, have been introduced. Are they not written in the book of Mr. Ben Lindsey? But now, having all this wealth of effort in mind, and remembering that we have only been able to give the baldest reference to aims and conceptions which have, in many cases, each involved years of struggle and willing labour which cannot be measured at all, we are tempted to put the old fatalist question, *Cui bono?* What good has it been to spend all this energy and devotion upon that which seems destined to failure; or to squander effort and pains upon that which appears to leave no mark of benefit bestowed upon the broad pages of time? What good to keep up the dismal, unrewarded, and profitless struggle? Happy is it for the people that human sympathy and all the better side of human nature rises superior to despair, and continues work which must, for a' that and a' that, have had influence beyond what we can tell, but which will not be without its reward, upon social conditions and upon the fortunes of the country.

What does all this expenditure of time and money and noble effort mean? Well, it has not been in vain; for undoubtedly a gradual improvement in the condition of the people has come round, and since the famine period of 1846 much better conditions prevail. The people are better housed and fed, wages have materially advanced, whilst the purchasing power of the sovereign is probably 20 per cent. more than it was forty years ago. But what an immensely greater progress might have been recorded if the national education of the children of the peasantry had included a well-devised system of industrial training, by which they would have been taught to use their hands, and had obtained a practical knowledge of the cultivation of the soil. The bulk of the land might by this time have been transformed into a garden, and the ignorance and idleness, with the consequent waste, would have been practically unknown. Even yet—notwithstanding the admitted necessity of better industrial and technical education—little or nothing is being done to remedy the defects of our primary system.

But it has not been for the purpose of bemoaning the failures of days gone by, or of discounting the efforts which are still being made, that this subject is now brought forward. We have something more practical than that in view, and, as we believe, something more hopeful. It is obvious that if the various societies and persons could work amicably and helpfully together, there would be a compound-multiplication prospect of substantial and permanent benefit for all of them. The unit, as all experience has gone to prove, can rarely have a chance of success in a business which depends so entirely upon far-away demand, and lives upon orders in driblets; but united effort would make use of each other's connections for the common good. The readiest and the most effectual means of bringing all the officers of the industrial corps into agreement, shoulder to shoulder, is by providing them with a newspaper or journal of their own. The printing press now-a-days provides the speaking trumpet of any cause, no matter of what dimensions. But nothing short of a regular issue, at short intervals, can accomplish much good in the case of societies and single-handed enterprises which have a benevolent as well as a commercial side, and nothing but a recognised representative can secure for them proper acknowledgment and support. We have under

consideration the extension of this Journal, so that it should act with and on behalf of these industries, as it would naturally do if any of them secured an established commercial position. But, as is hardly necessary to state, it would not be possible to add to the scope and responsibilities of the Journal without increased support, and we wait to see what encouragement would be offered if a new departure like this were to be attempted.



Practical Instructions in Linen Weaving.

IV.

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

Analysis of Samples.



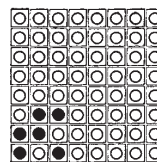
PROFIT and pleasure can be derived from the analysis of textile samples; the necessary practical skill for the construction of fabrics can thus be obtained without the ability to devise new weaves or colour combinations. The power to analyse gives confidence, and enables manufacturers to reproduce without waste of time or material. It is no doubt a tedious process, but practice and study will in a short time overcome the difficulties, so that many apparent intricacies of weave can be decided by a single inspection of a sample. This is really important, and cannot in any way be considered copying, when orders demand the same construction as the samples sent; in any case, it is merely an adjunct or initial step towards forming original ideas as a practical designer. A knowledge of drawing, though very desirable, is not always necessary in the production of patterns where small weave and colour arrangements are the main or only productions of a manufacturer. Ornamentation by the use of foliage or geometrical formations will require a training of the eye and hand, for the cloth should not only be pleasing to the eye, but properly constructed with a view to comfort and economy at a reasonable cost. Patterns are not in all cases the result of calculation and design; the accidental may turn up and become acceptable in the market as a favourite.

In dissecting cloths, it is necessary to have sufficient to show a repeat of both colour and weave pattern. After taking out a number of warp and weft threads to leave a fringe, we may decide to commence with the warp thread or weft pick. If the weft, then the marks are put on the squares of the design paper counting from right to left, warp threads up are dotted across; the colour and nature of each thread being noted, this process is continued, marking warp threads over the weft and leaving blanks for warp threads under the weft, until the number of picks taken out gives a repeat or a similar weft pick to that we commenced from. The warp repeat is found by the first weft pick bringing us to a similar warp thread as that taken on the right hand for a guide. If warp threads are taken and marked on the design paper vertically, beginning from the bottom and going upwards, the dots in the squares will be the reverse of the weft pick; the warp threads above the weft are blank, and those under the weft dotted. The difference between the two systems is merely a matter of convenience; the weft picks are nearly in all patterns less numerous than the warp pattern, so that the analysis would not be so tedious.

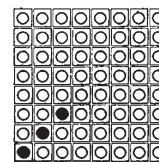
Drills.

The three-leaf twill. This weave is generally known as a drill. If woven warp face up, 3 threads and 3 weft picks give a repeat. The analysis of the weft and warp surfaces are shown in Figs. 1 and 2. The

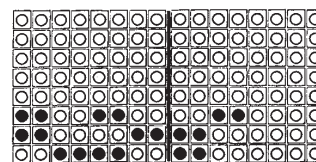
No. 1.



No. 2.



No. 3.



warp face No. 1 gives the best result for coloured stripes ; a neat pattern would be as follows for a fancy drill :—30 dents per inch, 3 in a dent, 56 lea warp, 40 picks per inch of 50 lea tow weft, one shuttle same as the ground in the warp either white or cream ; 15 white, 2 mid blue, 4 white, 2 mid blue, 2 red, 2 white, 2 red, repeat from the first 15 white. Another pattern :—60 cream, 6 light sky-blue, 3 white, 6 light sky, 60 cream, 12 chocolate, 3 white, 12 chocolate, repeat from the first, 48 cream, weft all cream, 56 lea tow, 48 picks per inch, 25 dents per inch, 3 in a dent, 56 lea line for warp. These patterns are much fancied for South American markets. In the construction of fabrics the rule is, whichever of the two materials forms the face surface, more threads per inch are required than of the other ; if a weft face more picks, if a warp face more threads per inch than weft ; and as these threads per inch increase, the counts or diameters must be in proportion, except in the case of some speciality.

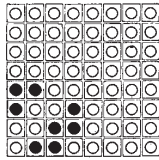
Fig. 3 gives a double twill plain ; distinct colours can by this means be produced on either side of a fabric. For heavy goods, a back of loose cotton twist—say soft rovings—may be used that can be well carded when finished, the face linen warp and weft ; a catcher thread would be required at the selvage, as it will be seen by the plan that two picks go into one shed at a time.

Patterns suitable for any reed, counts of warp and tow wefts, 12 white, 6 cinnamon brown, 3 white, 6 brown, 12 white, 3 brown (2 white, 1 brown repeated 8 times), 3 brown, and repeat from first 12 white, tow weft all white. Another pattern, using dark brown tow weft :—24 dark brown, 24 cream, 3 red, repeat from the 24 dark brown ; a variation of this pattern is 24 dark brown, 3 white, 6 red, 6 white, repeat from the 24 dark brown, weft dark brown tow.

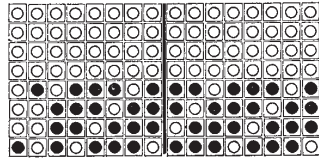
With dark blue tow weft, the following pattern :—36 dark blue, 6 red, 6 sky blue, 6 cream, 6 white, repeat from the 36 dark blue. All these patterns are favourites for out-door exercise ; but the colours must be fast.

New patterns for marquee or field tent fabrics :—24 white, 24 mid brown, 24 white, 24 sky blue, 24 white, 24 coraline, 24 white, 24 navy blue, the repeat from the first 24 white ; weft all white tow.

No. 4.



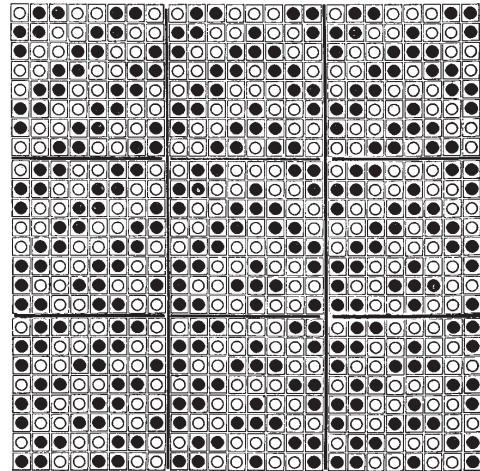
No. 5.



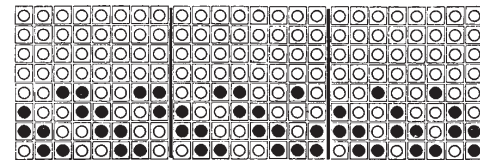
Four-leaf twill—One of the most common, but useful, of all other twills used in textile fabrics. The analysis is shown in Fig. 4, and simply consists of 4 threads of warp with 4 picks of weft. In all regular twills it is only necessary, in dissecting such samples, to take out two or three weft picks to find out how the twill advances ; once the base is obtained, the various movements of the diagonal line are easily followed out to the repeat. Extensive ranges of patterns can be produced by combinations of this twill. Fig. 5 is the weave plan of a fancy drill on 4 shafts, 16 to the round ; meaning that in the analysis there are 4 warp threads and 16 weft picks, 14 of these giving a warp face and the last 2 a weft throw-up or break, which might correspond with 2 silk or fancy threads in the warp pattern. Very complicated figures are formed on a four-leaf twill by drafting and the varied positions of the weft picks. We give a small design in Fig. 6, and here the question to decide is the same as in a large design requiring a great number of heald shafts ; we must know the draft ; this is shown below the design in its regular progression, beginning with the first vertical row, and marking each row with a dot until the 24 rows or threads are completed ; 4 shafts only are required, because there are only 4 threads, though placed in different positions in the design. The weave plan follows the draft, with this distinction, that the vertical rows with their marks or intersections are placed in the weave plan across ; in fact, these transverse rows from the vertical indicate the heald shafts ; the figure may be extended to any size by warp and weft threads. This cloth is very much in favour for fancy linings, woven all grey, bleached, and dyed in all the fashionable shades. The gathering together of a variety of samples in different styles, and closely examining into their construction, colours, and every detail, cannot fail to be of great importance, not only to students, but also those who are actively engaged in the production of textile fabrics. Taking Fig. 4, the ordinary four-leaf twill, equal in warp and weft, 36 dents per inch, 2 in a dent of 60 lea linen for warp ; 72 picks per inch of 60 lea weft. Two patterns which are here given will be found worth reproducing either as shirtings or dress goods :—4 white, 4 light fawn, 2 white, 4 light fawn, 4 white, 6 claret brown, 4 white, 2 light straw, 2 royal blue, 2 white, 2 royal blue, 2 light straw, 4 white, 4 claret brown, weft checking the same, repeat from the first 4 of white. The second pattern, same reed, counts, &c. :—4 indigo blue, 2 white, 2 bright red, 2 white, 4 indigo blue, 2 white, 2 bright red, 2 white, 4 indigo blue, 4 white, 2 fawn, 2 white, 2 fawn, 4 white (2 fawn, 2 white for 12 times), 4 white, 2 fawn, 2 white, 2 fawn, 4 white, weft pattern the same as the warp, the repeat to commence from the first 4 of indigo blue.

Fig. 7 is a small design with draft and weave for a peculiar make of fabric in linen yarns for trouserings and other purposes. The stripes are shaded off in drabs and blues, the widest portion of the stripes being mostly of the drab shading ; there is an equal quantity of yarn on each shaft, as will be seen by the draft dots. This is a great consideration in weaving, as it avoids undue friction or overcrowding, and in all designs should be the principal point for consideration, if at all possible. As a guide for the construction of a good quality of cloth from this design, the following particulars will be found acceptable :—22 dents per inch, 3 in a dent, 40 lea line warp, 64 picks per inch, same counts tow weft and warp ; pattern—12 light stone, 12 light red drab, 12 mid red drab, 24 light new drab, 6 light blue, 6 deep navy blue, 24 light new drab, 12 mid red drab, 12 light red drab, 12 light stone, 12 light blue, 12 mid blue, 12 dark navy blue, 12 mid blue, 12 light blue, repeat the pattern from 12 light stone, weft all light new drab. In making trial patterns a great saving of time in tying up, drawing, &c., will be obtained, if at all convenient, by having 8 or 12 shafts in the loom, the warp divided into as many coloured sections as possible, say 4 or 5 in the width ; by this means any number of four-shaft twill patterns may be produced—see Figs. 8 and 9 ; then we also have the power of developing 3 shafts, 4 or 6 shafts, and 12 shaft twills, diagonals, &c., on a 12 shaft set of healds, and with 8 shafts in the loom we can have plain weaves, 4 shaft and 8 shaft weaves, and easily produce an enormous variety in a few yards of warp, and may, in any one or more of the sections, vary the draft from straight over to broken or angular. A few threads of warp broken out or pieced up by others will save warping and give colour combinations ; in fact, it is not possible to conceive the number of changes that would result, and it is perhaps in some one of the number that the accidental may become successful. In the next communication the method of combining weaves for new effects will be shown.

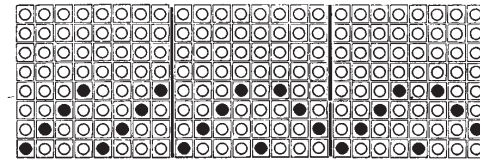
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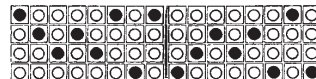
WEAVE PLAN, No. 6.



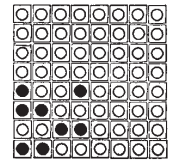
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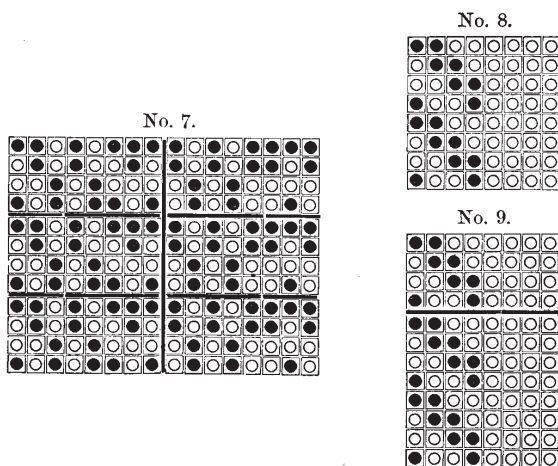


DRAFT, No. 7.



WEAVE, No. 7.





The Making-up Trades.
Shirt and Collar Factories.

THE amount of business being done in the shirt and collar trades is not increasing as the season advances to the extent that had been generally expected, or indeed in the degree that might reasonably enough have been looked for from the way the trade opened up in its commencement. As a rule, the opening orders afford a fair index to the amount of trade anticipated in the succeeding months; but, this year, the early promise of the spring business has by no means been fulfilled. Orders are coming in very slowly from all the centres of wholesale trade; indeed, the dullness is so general that it is difficult to account for it. The dragging Manchester demand is attributed to the extensive cotton strike in Lancashire; though the Manchester wholesale trade is too wide in its embrace to feel so much any falling off in the demand from so limited an area as that affected by the strike. Then, too, the London trade is far from being in the active condition usual in the beginning of March, and that of Glasgow is almost as dull as any other. Whatever be the cause, a strong feeling of misgiving and uncertainty prevails, and buyers everywhere seem indisposed to purchase anything that they can possibly do without. The demand from the South of Ireland is also unusually flat. I hear even of orders placed some time ago having been countermanded, and the falling away in trade in this direction is generally attributed to fear of the Home Rule Bill passing, and to the opinion, almost universal in the mercantile and trading classes, North and South, of the disastrous effect upon business that would be certain to follow it.

The demand for white shirts is quiet, though some fair special orders have been received for the medium and better qualities of longcloth shirts with linen fittings, and for dress shirts with plain linen fronts. A few dress shirts with pique fronts are still selling, but fine linen fronts of superior quality have been gradually displacing them, and pique seems about to be discarded altogether. The trade in all-linen white shirts seems to be altogether a thing of the past; the production now is virtually nil. An attempt was made some time ago to introduce fine linen diapers for bodies of shirts, but it was neither begun with much enterprise nor properly persevered with, and it has never attained any dimensions of importance. The trade in French print shirts is increasing, and a fair amount of business is passing in the first-class work Manchester print shirts.

In coloured cotton shirts, the spurt that was given to the trade by the talk of higher prices consequent on the strike in Lancashire has died away, and very few orders are at present being placed, either for present or future delivery. That, however, may be in consequence of the substantial buying that undoubtedly took place two months ago, and may also partly result from the fact that the expected advance in cotton piece goods has not to any great extent taken place. Heavy cotton goods can still be bought at prices only fractionally dearer than those of December. The shirt trade is very seriously affected by the dullness that has overtaken that important branch of it which is engaged in producing goods for the Australasian market, from which quarter no substantial improvement is yet reported.

In the lighter end of the trade, orders for collars and cuffs are coming in very slowly, but a steady trade is being done in "dickies," or fronts

with collars attached, and these are being largely produced in both all-linen and union, and some in all-cotton. Prices are no higher for the manufactured goods, notwithstanding the smart increase in cost of material, whether linen or union; and it is regrettable to hear again of prices being cut to an extent that is little short of suicidal. I hear of all-linen fronts being sold at a price that would be a low one for union fronts of the same size and quality. If other manufacturers were simply to stand aside and allow the makers of these cheap all-linen fronts to have all the trade that is going for them, the latter would soon grow weary of a traffic so utterly unremunerative. Whatever the remedy for it may be, or whether there be any remedy at all, the existence of "cutting" on the scale complained of is generally an evidence of a very dull condition of trade.

The Apron and Pinafore Factories.

Business in the apron and pinafore trades is in a somewhat irregular condition; in some lines a very steady business is passing, while in others, usually in a very active state in the beginning of March, very great dullness prevails. A very good business is still being done in ladies' shirts and blouses; these goods might fairly enough be referred to either in the preceding report or in this one, as the trade has been tempting enough to induce both the pinafore makers and the shirt and collar manufacturers to enter upon it. This season they are being freely bought, and in an even wider range of material and design than last year, though prints in hair-cord designs are still being produced more largely than any others. So much depends upon the cut and style of the garments, and the way they are finished and turned out, that there is not here the same keen cutting of prices that prevails in some other branches, and the trade, it is satisfactory to report, is both a large one and fairly profitable. The fancy pinafore trade is far from being so good as might reasonably have been hoped for, and, except where special lines have taken hold on public favour, the turnover is not up to that of last season at the corresponding period. Some special designs, however, chiefly in fancy costume muslin materials, that have been recently brought out by some of the local factories, are taking well in the London market, and I hear of fair Canadian business for some of them. There has been some revival of demand for aprons and pinafores made from Swiss checks; but none of the local manufacturers now do at all largely in these, and, being unprepared for inquiry, the resultant business has been small. It is thought that this branch of the trade, which was a very extensive one a few years ago, and only killed by the introduction of very poor qualities, may revive again during this coming summer. Lawns, made up in a great variety of designs, are still taking well, and the trade in them promises to be permanent.

The holland apron end of the trade is in an unaccountably dragging condition, when the period of the year is taken into account, and the facilities that cheap cloth has afforded the local makers. It is said, however, that stocks in the hands of the cross-channel warehousemen are small; and if the orders come regularly to hand, and in sufficient numbers to make the aggregate trade of the season tot up to the average, "hand-to-mouth" buying would be the most profitable shape business could assume for the manufacturers. It would certainly be preferable to being at their wit's end for a few months for workers, and equally put about to find employment to keep the same workers together when the rush of the demand has fallen away. Makers are still much favoured as regards the supply of material; in very few instances have they had yet to pay any advance in price of cloth, notwithstanding the great advance in the cost of production, especially in the case of union pales. The holland apron trade would seem to be in a state of transition; in last issue I referred to the fact that all-cotton holland goods had almost completely gone out of demand, union aprons having taken their place. I now hear that union hollands are having, in their turn, to give way again to some extent to all-linen goods, but to how great an extent I am not yet fully informed. Desirable as it might be from a linen-trade point of view, I fear that union hollands will not be to any substantial extent displaced by all-linen, unless the cost of the former were to be very considerably and permanently increased. Even then, some means would have to be devised to make the all-linen goods take the same brilliant finish that the unions do.

The Irish Woollen Trade.

The Winter Buying.

BUYING for the coming winter season is going on still in the wholesale trade, though the more important buyers have almost concluded their arrangements for opening parcels. So far as it has gone, the trade has been satisfactory to the Irish manufacturers. Of the total amount of orders placed for tweeds, there is no doubt whatever but that a larger proportion has gone to the Irish makers, and a smaller proportion to those of Scotland, than in any previous season. The Scotch tweeds come nearer to the Irish, and enter more keenly into competition with them than any other; and the present position of the Scotch woollen trade may furnish a warning to those unwise friends who are so frequently urging the Irish to adopt the shoddy manufacture. Irish tweeds, as regards quality and soundness, occupy in public estimation to-day the position occupied in those respects by Scotch tweeds fifteen to twenty years ago. The Scotch manufacturers have not maintained the sterling quality of their former productions, and the result may be seen in the fact that half the mills in the South of Scotland are

The Belfast Linen Trade Report.

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

It is satisfactory to be able to record a steadily improving demand for both yarns and cloth, which has been well kept up since last report, so that stocks on the market have been reduced to an exceptionally low point, and manufacturers, as well as spinners, are now well engaged on contract orders.

FLAX.

The high level of prices for both home and foreign flax previously recorded has not only been maintained, but business done of late has been at hardening rates. Any lots of Irish flax at the scutch mills or brought to market found ready buyers at extreme rates. A few reports are appended, but season is now over.

February 18th.—BALLYMENA—6 tons of milled, which sold from 6/- to 9/- per stone. COOKSTOWN—2 tons of milled, prices from 6/9 to 8/3; no change in quality. 24th.—BELFAST—1½ tons in local market to-day, which sold from 7/6 to 8/3 per stone. March 2nd.—BALLYMONEY—27 tons of milled, prices ranging from 55/- to 70/-; chiefly of medium quality; a few choice lots; large attendance of buyers; demand brisk. 3rd.—COOTEHILL—2 tons of milled, prices from 4/9 to 6/-; small attendance of buyers; prices firm. 4th.—BALLYMENA—1½ tons of milled, prices varying from 6/6 to 8/- per stone.

YARNS.

Not only has demand been well maintained during the past month, but the steadily advancing tendency of prices has caused buyers to place contract orders considerably in advance of their requirements, so that strong buying is reported in all departments. In fact, a larger business could have been done, but spinners were unwilling to add to their already heavy engagements. In the coarse and medium numbers of both lines and tows a further advance is established, following the increased cost of flax. The advance in foreign yarns has been much greater than in Irish, more particularly in their finer counts. The comparative cheapness of our yarns has led to heavy shipments to the Continent, the Board of Trade returns for February showing an increase of nearly 28 per cent. in quantity over February, 1892.

BROWN POWER AND HAND-LOOM LINENS.

Light power-loom bleaching cloth has been in very good demand of late, green yarn goods being well cleared out, and manufacturers ask a farthing advance. More doing in special makes, prices being about a halfpenny up. Medium and heavy grades of cloth sell steadily at about a farthing advance. Ballymena goods, except the fine setts, are also in very good request at stiffening rates. Stocks on the

market very low. Coarse and middle setts have sold at an advance, but still not in proportion to the advance in yarns. County Down makes move off regularly, prices being about a halfpenny per yard advanced. Cloth for dyeing and printing, as well as dress linens, have all shared in the improved demand. Roughs are more active, and all classes of union goods have been freely dealt in, manufacturers being, in fact, well supplied with work in these goods. Linen handkerchiefs have been slow in responding to the improvement noticed in other kinds of linen goods, but some considerable sales have been effected at low prices. As the market is now bare of stocks, manufacturers quote threepence per dozen more for further orders. Cambric handkerchiefs and cambric cloth are still very quiet, and prices show little change. Damasks and fancy linens are in very fair request, and prices firm on all makes.

BLEACHED AND FINISHED LINENS.

Home Trade.—It can scarcely be said that there is any change in this branch of trade by way of improvement, the larger inquiry of a few weeks ago not having been followed up. The very dull condition of many trades across the Channel, coupled with strikes, have undoubtedly affected linen interests in the great distributing centres.

Continental.—Much of the usual average description, the advance in cloth not appearing to have in any way affected the volume of trade with these markets. Official figures show larger shipments to Germany and Italy, but smaller to France and Spain.

United States.—Advices of a cheerful character come from this market, the general spring trade in all kinds of textile goods being reported brisk. The linen trade has shared in this improvement, and a healthy demand exists for nearly all descriptions of linens and unions. The Board of Trade returns show an increase of over 21 per cent. in the quantity of piece goods shipped in February compared with same month last year. It is satisfactory to learn that the proposed further increase in the linen duties, which was to have taken effect from January next, has been postponed for another year.

Other Markets.—The Foreign West Indian trade is steady, and so is that of Brazil. With British North America, Australia, and Mexico, official returns point to a smaller trade last month.

For the two months of the year, the total quantity of linen piece goods exported from the United Kingdom is 14.3 per cent. and values 8.3 per cent. above the same period last year.

Prices Current for ordinary Line and Tow Wefts. March 14th, 1893.

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	—	—	—	7/9	7/-	6/3	5/10½	5/4½	5/1½	4/9	4/6	4/4½	4/3	4/1½	4/-	4/-	4/-	4/-	4/-	4/-	4/1½	4/3	4/4½	4/6	4/9	5/-	5/3	
Tow Wefts	5/10½	5/7½	5/6	5/3	5/1½	5/-	4/10½	4/7½	4/6	4/4½	4/3	4/1½	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		

short of orders. All the leading Irish manufacturers have been in Belfast recently, but a further visit to meet the later buyers will be necessary. Indeed, on this head a considerable amount of grumbling has been given vent to by the manufacturers, and not without reason. The buying period for any given season is not now confined to any definite week or month, but stretches over the greater part of a quarter of a year. One buyer will buy very early, for some mysterious reason; another will buy a fortnight later; two or three more in the course of a month or six weeks, and the remainder in one to two months after that again. No maker can come to Belfast now with any hope of finding more than about a couple of customers prepared to look at his goods at any given time; whereas, formerly, a maker could show his goods to every wholesale buyer in Belfast within a couple of days. The present system is a grievous inconvenience to the trade, and it is hard to suggest a remedy for it. It is the harder to bear that there is no legitimate cause for it. It is all a piece of affectation on the part of the buyers; it is all the same to them when they place their orders, and there are none of them so overburdened with affairs that they could not look at the samples at any time. Cheviots continue to sell freely, but a fairly large proportion of Saxony tweeds have this year been ordered. A very fair amount of business is being done in serges, especially in indigos, and in the heavier weights,

say 12 oz. to 14 oz. per yard for narrow widths. Very few light or even medium weights are now being bought in Belfast for any season. In worsted coatings, a limited but steady business is passing for superior qualities. Well-made Donegal homespunns are expected to sell again freely in the local tailoring trade during the coming season. The improvement in texture and regularity of these goods is very marked, as compared with the production of even a few years ago. Donegal homespunns, of a quality such as is produced by Cormick Cannon and others, will always meet with good sale. They make up into not only handsome, but serviceable garments.

Dress Tweeds.

Opinions differ considerably as to the extent of the trade that will be done this year in Irish dress woollens. Now that the crinoline scare has been dissipated for a time, buyers are less timid about taking up tweeds with freedom. There is a general opinion that, if Irish manufacturers were to produce dress goods of a finer and less of a "chevioty" character, a good trade would result. In this regard a good example has been set by the Caledon Mills in introducing the makes of costume cloths for ladies' tailor-made gowns and wraps that have been so successful, and

Exports of Linen Yarns and Linens from the United Kingdom for the Month ended February, 1893; and in the Two Months ended February, 1893, compared with the corresponding periods of the Years 1891 and 1892.

COUNTRIES.	MONTH OF FEBRUARY.						TWO MONTHS ENDED FEBRUARY.					
	Quantities.			Declared Value.			Quantities.			Declared Value.		
	1891	1892	1893	1891	1892	1893	1891	1892	1893	1891	1892	1893
LINEN YARN.	Lbs.	Lbs.	Lbs.	£	£	£	Lbs.	Lbs.	Lbs.	£	£	£
To Germany,	267,100	200,706	375,300	20,881	16,886	28,499	460,500	377,500	564,300	38,117	32,784	43,540
Holland,	208,400	194,100	247,000	7,373	7,082	8,192	307,200	381,800	495,900	11,143	13,438	16,247
Belgium,	127,700	106,000	182,200	10,667	8,278	12,520	272,600	230,300	371,200	22,851	19,226	24,986
France,	103,400	94,500	115,000	11,193	10,947	12,145	197,400	353,800	225,900	21,751	38,002	24,104
Spain and Canaries, ...	353,500	349,500	269,700	11,494	12,292	12,298	712,500	719,600	589,200	24,542	26,434	25,332
Italy,	27,500	22,500	22,900	1,189	1,288	1,386	63,100	77,100	50,500	3,186	3,739	2,527
United States,	34,000	16,900	43,800	1,556	789	1,468	51,000	39,500	95,400	2,295	1,743	3,249
Other Countries,	91,400	137,600	179,900	4,320	6,375	8,307	204,500	349,600	427,000	9,590	16,162	18,985
Total,	1,213,000	1,121,800	1,435,800	68,673	63,917	84,815	2,273,800	2,529,200	2,819,400	133,475	151,473	158,970
LINEN MANUFACTURES.	Yards.	Yards.	Yards.	£	£	£	Yards.	Yards.	Yards.	£	£	£
To Germany,	285,600	319,500	356,200	13,615	15,669	18,942	550,900	558,400	573,000	27,013	26,488	29,725
France,	131,600	78,300	60,900	5,993	3,659	2,798	336,000	748,700	176,600	14,772	33,054	8,171
Spain and Canaries, ...	99,200	96,700	39,200	3,859	4,030	1,181	249,800	215,100	73,000	9,590	8,335	2,087
Italy,	94,100	55,700	66,400	3,622	2,371	2,651	166,000	156,900	134,500	6,470	5,973	5,245
United States,	8,551,000	8,278,200	10,053,300	173,761	172,073	203,159	18,309,000	17,570,600	22,465,300	380,425	364,035	457,184
Foreign West Indies, ...	1,488,900	1,503,300	1,425,600	23,506	28,640	27,471	2,680,800	2,771,400	2,938,200	53,473	51,783	55,862
Mexico,	189,400	142,400	71,900	4,925	3,250	1,737	353,500	210,900	150,300	8,754	5,035	3,806
United States of Colombia,	268,800	251,900	267,600	4,576	4,432	4,553	663,500	660,200	693,100	11,104	10,828	11,509
Brazil,	323,700	175,800	172,000	11,199	5,538	5,705	645,800	324,000	387,100	22,201	9,797	11,785
Argentine Republic, ...	40,700	17,000	103,000	1,472	698	4,046	88,200	39,100	166,000	2,859	1,360	5,885
Philippine Islands, ...	258,800	8,300	21,000	4,553	378	702	479,900	19,200	88,800	8,581	724	2,207
British North America British West India Islands & Guiana } Do. East Indies,	831,300 193,600 264,700	806,400 131,300 256,600	598,300 123,000 332,500	16,252 3,952 7,789	15,173 2,803 7,646	11,888 2,537 7,919	2,096,800 330,900 506,400	1,720,400 240,200 558,600	1,733,500 274,700 541,700	38,932 6,496 14,795	31,161 5,389 15,255	29,662 5,397 13,469
Australasia,	732,600	1,006,000	768,900	22,332	28,329	19,969	2,002,500	2,329,000	1,781,400	61,474	62,673	48,647
Other Countries,	1,386,300	1,289,200	1,168,400	31,088	28,352	24,656	2,714,800	2,373,700	2,686,500	59,548	52,389	50,719
Total Plain, Un- bleached, or Bleached	13,745,500	13,349,800	14,172,900	294,836	283,512	303,786	29,120,100	28,170,000	31,494,100	636,508	611,216	660,116
Total Checked, Printed, or Dyed, and Damasks or Diapers,	1,096,100	826,600	1,286,200	30,071	23,301	28,508	2,576,400	1,877,100	3,014,700	68,273	52,119	65,187
Sail Cloth and Sails, ...	298,700	235,200	169,100	13,087	11,228	7,615	483,300	449,300	354,900	21,706	20,944	16,057
Total of Piece Goods,	15,140,300	14,411,600	15,628,200	337,994	323,041	339,909	32,179,800	30,496,400	34,863,700	726,487	684,279	741,360
Thread for Sewing,	183,400	184,500	182,200	23,059	21,424	23,330	371,200	404,200	370,300	45,547	48,907	45,923
Other Articles,	85,851	79,993	86,367	178,190	169,457	174,779
Total Value of Linen Manufactures,	446,904	424,458	449,606	950,224	902,643	962,062

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

COUNTRIES.	MONTH OF FEBRUARY.						TWO MONTHS ENDED FEBRUARY.					
	Quantities.			Value of Imports.			Quantities.			Value of Imports.		
	1891	1892	1893	1891	1892	1893	1891	1892	1893	1891	1892	1893
From Russia,	Cwts.	Cwts.	Cwts.	£	£	£	Cwts.	Cwts.	Cwts.	£	£	£
From Russia,	4,230	4,720	114,560	119,597	7,546	13,361	1,924	205,585	343,935	51,065
" Germany,	292	290	32	8,853	4,618	890	384	611	261	11,133	12,770	5,802
" Holland,	452	788	793	21,730	35,992	37,596	688	1,283	1,664	34,615	61,179	70,319
" Belgium,	1,499	2,193	1,311	79,506	121,406	89,079	2,701	3,488	3,936	146,181	189,910	193,646
" Other Countries, ...	92	145	188	2,074	3,846	4,079	976	430	197	23,771	10,725	5,716
Total,	6,565	8,136	2,774	226,723	235,459	131,644	12,295	19,173	7,982	421,285	618,519	331,548

SOME OF THE GREAT TEXTILE INDUSTRIES OF IRELAND.

MESSRS. J. N. RICHARDSON, SONS & OWDEN, LIMITED, BELFAST.



HEAD OFFICE AND WAREHOUSE, DONEGALL SQUARE NORTH, BELFAST.

Of the mercantile firms which occupied a prominent position in the linen trade a century ago, few have continued to the present time, and fewer still are those who, having reached so advanced a stage in their career, are found to have maintained the position they formerly occupied in the front rank of commercial enterprise. The law of mercantile life, as we look around, seems to be that old age brings with it a certain loss of vitality, and that when firms have maintained a strong lead in their respective trades for any considerable time, they fall off somehow, or their places are usurped by others less advanced in years. To this general rule there are, however, many pleasing exceptions, a noted instance of which is furnished us in the case of the firm now under notice, which, though advancing in the second century of its existence, gives strong proof of renewed and increased vigour, and to-day occupies, as it has long done, a position of acknowledged leadership in the van of the trade.

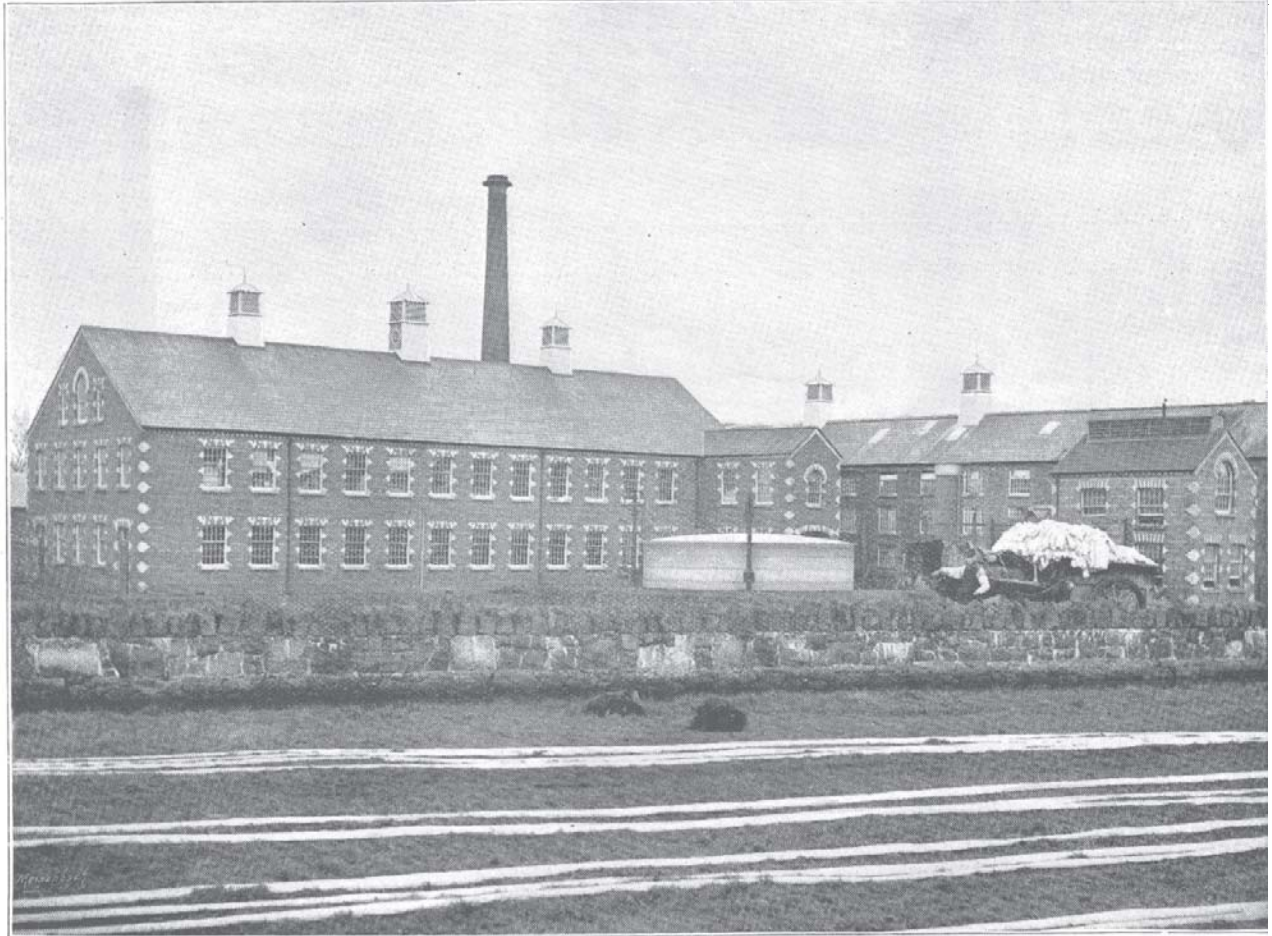
The history of this firm is too well known to demand relation at any length. Started originally as J. J. & J. Richardson, joined in 1825 by Mr. Owden, when the present style of the firm was adopted, it occupied from the first a position of importance, and early in the century is referred to as among the leading manufacturing, bleaching, and linen establishments of Ireland. For a very long period business was carried on in a large warehouse in Donegall Place, extending back to Calender Street; and when the era of Exhibitions set in, we find it gaining medals successively from the Flax Improvement Society in 1845, at the great Exhibition of 1851, the London Exhibition of 1862, the Dublin Exhibitions of 1865 and 1872, the International Exhibition of Philadelphia in 1876, the Cork Exhibition of 1883, and the International Exhibition of Toronto in 1884.

As the business continued to increase, it was found that the Donegall Place warehouse was not sufficiently commodious, and accordingly, in 1869, the present warehouse was erected, of which an illustration is given. It is a noble structure, in red sandstone, enriched by columns of polished granite and castellated buttresses, and approached by a handsome doorway. On the front are carved stone medallions, together with the initials of the firm and the "lion rampant," the crest of the Richardson family. The frontage measures 106 feet to Donegall Square, extending rearwards by Calender Street a distance of 136 feet, and has an elevation of almost 100 feet. Passing through the interior, in order to form some idea of the extent of the business carried on within, the counting-house is first entered; this is handsomely fitted up, and lighted from a semicircular glass roof, in which coloured glass is effectively introduced. On this first floor, in addition to the counting-house, are the general offices of the Company, with the offices of the Secretary to the Company and the general Manager—gentlemen whose experience and knowledge of the trade have materially contributed to the development of the business in recent years. Here also is the Board-room, where the Directors meet for consultation. It is a spacious and handsomely-furnished apartment, and worth a visit from those who take an interest in the earlier history of the staple trade, as on the walls are a series of engravings, twelve in number, of considerable antiquity, representing the different stages of the manufacture, from the growth of the flax-plant to the bleaching of the finished fabric, and furnishing a complete representation of the several processes—some of them crude and primitive enough—then carried on, as the hand-scutching, carding, and preparing of the flax; hand-spinning of the yarns on the old Irish spinning-wheel; reeling, warping, and winding; hand-weaving on a loom of rude construction, but the forerunner of its highly-developed descendant, the

ingenious and intricate damask-loom of to-day; bleaching, apparently then a work of summer recreation, and others. The hand-spinning of yarns must not, however, be classed with others of the above, when speaking of them as immature and imperfect processes. It is worthy of being mentioned, in passing, that from a comparatively early period in the history of the trade hand-spinning of yarns had attained a wondrous degree of perfection, and occupied a position far in advance of the other mechanical arts of the day. In Ulster, the counties of Down and Antrim were celebrated for the production of fine linen yarns, and a considerable trade was done in the exportation of these to the sister kingdoms. The author of *Ireland and her Staple Manufactures* gives instances of fine cambrics woven early in the century from yarns of the almost incredible degrees of fineness of 750 leas and 1000 leas. That day has long gone by, and the Irish spinning-wheel has, alas! almost become little more than an object of interest to the antiquary. Nevertheless, the superiority of Irish linen yarns is still unquestioned, some of our mills spinning the finer counts up to 400 leas, and even finer than these when specially called for.

In the Board-room also is "The Visitor's Book." Since the date of its erection this warehouse has been regarded as one of the "show places" of Belfast, to which public men and distinguished strangers visiting our city are invariably taken,—ample evidence of which is supplied by this book, which contains the autographs of eminent men, both home and foreign, from Yokohama to Australia, and from Colorado to India and the Cape. The firm has been frequently honoured by the visits of royalty. In this book the names of their Royal Highnesses the Prince of Wales, the Princess of Wales, and their eldest son appear, modestly enough, as "Albert Edward," "Alexandra," and "Albert Victor." Near to these are the signatures of the Earl and Countess Spencer, and the Princess of Mantua and Montserrat. In the neat but crabbed-looking hieroglyphics of the Japanese language appear the titles of some notabilities from Lapporo and Osaki, Japan, renderings of the same in English being considerably appended beneath.

The space at the rear of the offices and apartments mentioned is occupied as a packing-room, and underneath all is an extensive basement used as a store for brown cloth, or, as termed in other textile trades, grey



A PORTION OF THE GLENMORE BLEACHWORKS AND SPREAD-GROUND.

goods. The basement, or brown store, extends over the entire length and breadth of the building, and the quantity of goods that can be stored in it is very great.

On the second floor is a well-appointed saleroom, in which are kept samples of every description of linen goods produced. The walls are adorned by artistic devices of the many prize medals gained by the firm for the excellence of their productions. Here also is a most interesting *multum in parvo* linen trade exhibit, in the shape of a small glass case attached to one of the walls, and which contains flax in every form—seed, flax in straw, scutched flax, dressed flax, yarns, loom linens, and the bleached and finished fabric. Occupying the entire remaining portion of this flat are the lapping and entering rooms, &c. Here the folding, pressing, and ornamentation of the goods before being shipped are carried on. The utmost care is given to these matters, and a very attractive appearance is imparted to the goods—as is, indeed, fitting in connection with fabrics many classes of which are in themselves so beautiful, though so much stress is not now laid upon ornamenting as in former days. Many of the readers of this Journal will, however, remember a time when the

sealing of Richardson's linens—the gold sealing especially—was conducted with as much privacy and precaution as the drafting and printing of certain Acts of Parliament are said to undergo at present. Richardson's seals—when such sealing was regarded as all-important—were held in high esteem in all the markets of the world, especially in the New York market, and the men who were responsible for the gold sealing were said to have conducted their operations under lock and key. The entering department is in many respects an interesting one. Here are piled up, waiting despatch to the packing-rooms, goods for every market in the world. In apparent confusion, though in regular order, may be seen piles of linen fabrics destined for places very far apart indeed—Manchester, Melbourne, New York, London, Chicago, the Cape, and elsewhere. To the United States are sent large quantities of glass-cloths, towels, white linens, lawns and cambrics, embroideries and damasks of the costliest texture and design; to Australia and other foreign markets similar ranges, but, as a rule, of hardly so expensive qualities; to the home trade, an assortment of everything, plain and fancy, high-priced and low-priced.

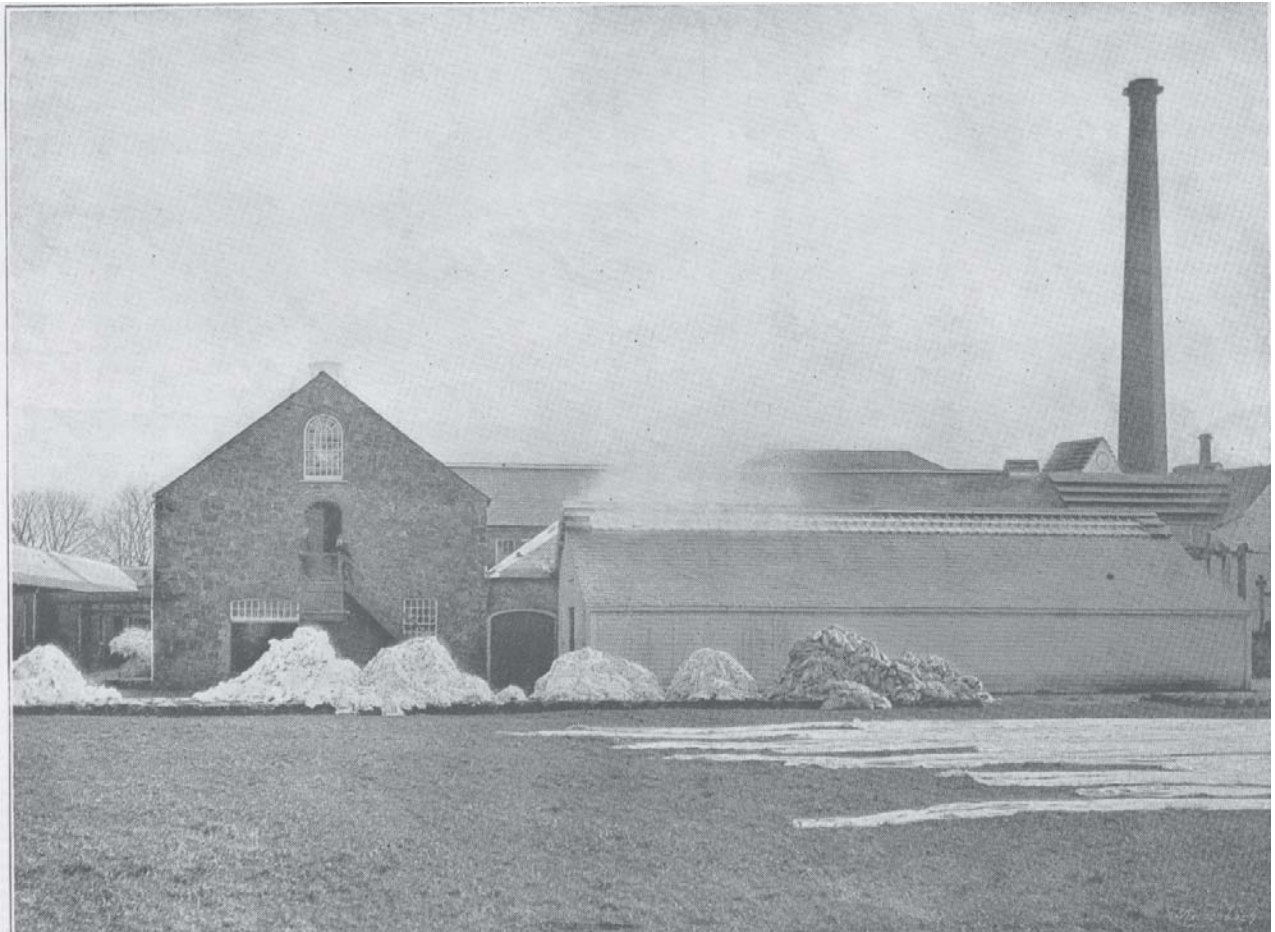
The third floor is divided into two compartments. That to the front of

the warehouse is devoted to embroidery, a department which, within recent years, since the embroidering of all classes of household linens came to be so much in vogue, has become a very prominent and important one, one to which much enterprise and skill is devoted, and in which much capital is invested. The firm employs its own designers, and the processes of preparation for embroidering are altogether carried on upon the premises, from whence the goods are then sent to the various agents of the firm in County Donegal and other districts, to be embroidered in the homes of the peasantry. It is pleasing to note that in this branch of the manufacture—which is a cottage industry on a very large scale—a substantial sum is paid away each week in wages. For the embroidering alone of sheet-shams, several of which are at present being finished at Glenmore, large sums are paid; and some scalloped embroidered handkerchiefs, of scroll and floral design, with sparring and lace work, are at present being got up for exhibition at the forthcoming World's Fair at Chicago, that will cost upwards of £20 per dozen, a great part of the cost of which is wages. It would be impossible to describe the variety of exquisitely beautiful wares that are to be seen in this department,

embracing every kind of hand-embroidered household linens—embroidered bedspreads and counterpanes, pillow and sheet shams, tea and side-table cloths, &c. In all the varieties the workmanship is very excellent, and the designs are chaste and effective, reflecting great credit upon the several artists. In hand-embroidered afternoon tea cloths, sideboard cloths, &c., much skill is displayed in the designs which are novel and attractive. One very handsome tea-cloth, with beautiful vine pattern woven in the damask, was afterwards veined and embroidered in a similar style to harmonise. A speciality of the department is some very choice designs in table-cloths, in which the patterns are partly woven and partly embroidered. Less striking in appearance are the hemstitched sheets and frilled linen pillow-cases; but the trade for these is very considerable, notwithstanding.

For the World's Fair at Chicago, above mentioned, very extensive preparations are being made in this and the other departments, and the resultant exhibit will doubtless be more than ordinarily effective and imposing.

Of the remaining and larger portion of the third floor, about one-half



WORKS FOR BROWN CLOTH AND PRELIMINARY PROCESSES.

is occupied by bleached linens of all kinds, of every width, grade of weight, and degree of fineness. The stock here is truly enormous, as indeed it must be, to meet the requirements of a trade so extensive, and where the qualities are so numerous and varied. On the opposite side from the white linens is the stock of towels, hucks, glass-cloths, and such-like goods. Forming almost a department by itself is the stock of "Linen Dress Foundations," the trade in which was introduced by Richardson, Sons & Owden, and in the introduction of which the firm has conferred a benefit alike upon the linen trade, the costumiers, and the wearers. The "foundations" are all pure linen, and experts agree that no material ever introduced as a dress lining is at once so satisfactory and suitable. It is to be regretted that a cotton imitation, "Linenette," has been since produced, which resembles it indeed in name, but possesses none of its good qualities. The Merchandise Marks Act, unfortunately, does not touch these shams. All such colourable imitations ought to be branded in some way to protect the public from imposition. The linen dress foundations, however, have taken a firm hold of the trade, and the business in them is increasing. Richardson, Sons & Owden

now produce them in one hundred and fifty different shades, and have obtained a perfection in dye, even in the most delicate colourings, that was long thought to be impossible in linen goods.

The fourth floor is divided similarly to the third. Toward the front, and extending over the embroidered linen room, is the handkerchief department, which contains all the different varieties of linen and linen cambric handkerchiefs, woven bordered and hemstitched, plain and printed. In addition to these, a large and growing trade is done in embroidered and fancy handkerchiefs. The department has its own designers, and the staff is constantly producing fancy handkerchiefs, fine and glossy in fabric, and in artistic designs of rare beauty. The handkerchiefs already mentioned as being prepared for the Chicago Exhibition were designed in this department.

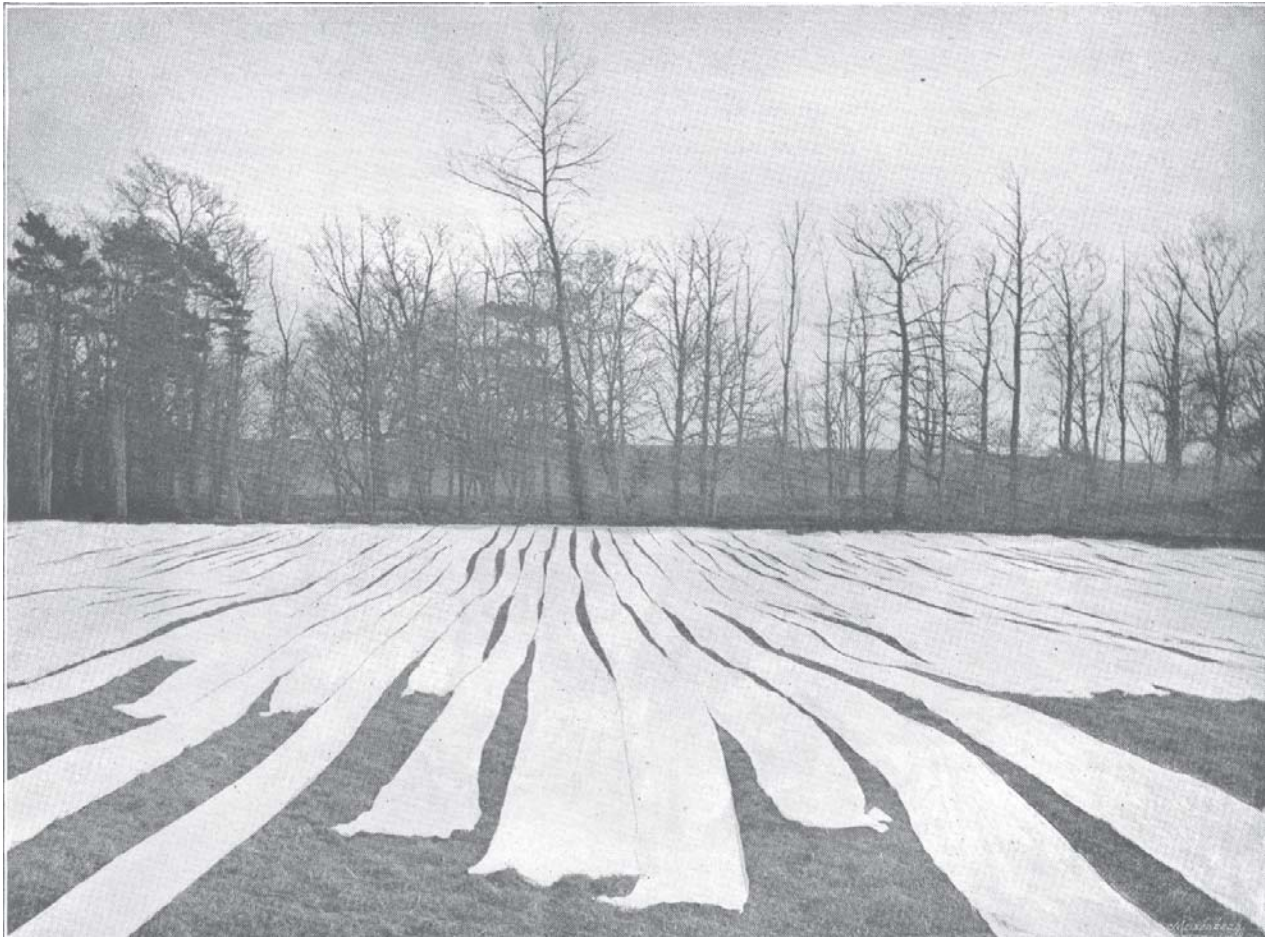
In the chief compartment of this floor are the damask goods for the manufacture of which the firm has long been celebrated. The headquarters of Richardson's damask manufacture are at Lurgan, and the great secret of the superiority of the goods made consists chiefly in the high-class yarns from which they are produced, and the increasing care

exercised in the weaving. Novelty in design is also constantly aimed at. The designs are by the best artists, and some of these, as they are produced, take rapid hold on public favour. One of the latest consists of groups of passion flower, crinum, lance-leaf lily, and rose, with ornamental border and centre. It is produced on double damask cloths and napkins of great beauty of texture, and has a fine effect, the floral groups seeming to stand out in relief upon a ground of snowy satin. It is with regret that we find we cannot spare space for a description of a number of these charming and artistic designs; and we can do no more than say that the excellence of the fabrics now produced well maintains their ancient fame. One beautiful table-cloth, woven of silk upon linen, and with figures representing the four seasons of the year, is deserving of special mention, as, indeed, are many others that testify to the degree of artistic merit and perfection of manufacture to which the trade in Ulster has attained. We must, however, pass on to notice the extensive bleaching and finishing concerns of the firm.

Glenmore Bleachworks.

All the care which, as we have stated, is given to the manufacture of the goods—their superiority of yarn, perfection of weaving, beauty of design, and so forth—would produce a comparatively incomplete result, but for the careful and scientific manipulation the fabrics undergo during the process of bleaching. In this regard, the firm of J. N. Richardson, Sons & Owden enjoys very special advantages in the possession of the Glenmore Bleachworks, one of the most extensive and thoroughly equipped bleaching and finishing works in the kingdom.

Beautifully situated in the valley of the Lagan, surrounded by the gently rising hills of Down and the loftier peaks of the Antrim mountains—Divis, Aughrim, and the cone-shaped Collin; in the midst of a well-wooded, fertile, and highly-cultivated district; possessing close on two hundred acres of grassy plain for spread-grounds, with a never-ceasing supply of purest water; within seven miles of the Belfast warehouse, to which the telephonic and telegraphic communication of these days make it almost an adjunct, Glenmore is noted alike for the picturesque beauty



A CORNER OF ONE OF THE BLEACHGREENS AT GLENMORE.

of its surroundings, its convenience for the rapid and effective conduct of business, and the facilities it possesses for the delicate and intricate processes through which the valuable fabrics pass in the work of bleaching and finishing.

Within a few hundred yards of the works is Glenmore House, the residence of Mr. Charles H. Richardson, a handsome edifice in which four generations of Richardsons have successively resided since, nearly a century ago, the family acquired possession of the Glenmore property. Previous to this the main business was carried on at Millbrook, which is situated on a fall of the river about a mile and a-half further up the valley, where various processes of beetling and finishing are still carried on in connection with Glenmore.

Glenmore is within an easy walk of Lambeg or Lisburn stations on the Great Northern line, and the position of the ground affords a splendid view of the works as they are approached, building after building forming a most extensive range. On both sides of the river Lagan, which separates the counties of Antrim and Down, stretch out the acres of "spread-grounds," where numerous workers are constantly engaged

laying out cloth in apparently endless parallel lines, or in taking up and packing in carts to return to the works that which has been already sufficiently "grassed" or whitened. An interesting scene of busy industry it is, and a wonderfully diversified appearance is given to the view by the dark drab of the outspread, newly-wetted brown cloth, alternating with other stretches of fabrics of various degrees of lightness, up to the snowy whiteness of the fully bleached. In this number a representation is given of that portion of the works where the arrival and departure of the brown and white cloth to and from the spread-grounds takes place. Almost at the short journey's end, overlooking the works, and commanding a magnificent view of the surrounding country, is the residence of the respected Manager. A short way off is a building which affords pleasing evidence of the consideration which has always been evinced by the Richardson family for the happiness and well-being of their people. In it a day-school for the children of the employés is carried on, and here also are held frequent concerts, readings, &c., for the workers and their families.

Before proceeding to notice briefly the present condition of the bleach-

ing business at Glenmore—for it is not our purpose, nor would it be of interest to the generality of readers, to enter into a detailed and technical description of the many processes of bleaching—it will be interesting to dwell for a moment upon the antiquity of the concern, and something of its bygone history. On the furthest confines of the spacious spread-grounds is a collection of houses in which a number of the workers reside, which bears the suggestive name of “New Holland.” “Thereby hangs a tale,” and one which brings into striking prominence the early days of Glenmore as a bleachgreen. Bleachers of the olden time, like their successors of to-day, were desirous of improvement. The process of bleaching, as then carried on, was of a very primitive kind, and the result, so far as colour was concerned, unsatisfactory. Continental bleachers had then a reputation which, fortunately for Ireland, they have since failed to sustain, or rather it is more correct to say that their former pupils have far outstripped them in the race, Irish linen-bleachers being now confessedly “easily first” in the world. A very different state of things, however, prevailed at the time of which we write, and, with a view to improvement, early in the last century some workpeople,

skilled in the art of bleaching as then carried on in Holland, were brought over from that country. Cottages were built for them close to the bleachworks at Glenmore, and the locality was named by the immigrants, in memory of the fatherland, “New Holland.” The name survives to this day, and the fields where the cottages were built are now part of the Glenmore bleachfields.

In those days the annual output of even the largest bleachgreens was very limited. Modern improvements and appliances had not then been even thought of; buttermilk was the only acid used in bleaching, and work was only carried on during the summer months. A friend of the Davies family has in his possession a letter written in 1763, in which it is stated that the bleachworks at Glenmore could at that time turn out 3,000 pieces in the year, the pieces then being of the uniform length of 26 yards. As time rolled on, the productive power of the greens increased, and the rate of progress, though by no means what would be in these days thought rapid, was a cause of much satisfaction to the proprietors. It is on record that a banquet was given by one of the Lagan bleachers at the close of a successful year's business, whereat much



COLLECTING THE CLOTH AFTER BLEACHING.

jollification and congratulatory speechmaking prevailed, and at which the proprietor, flushed with wine and triumph, boasted that he had that year bleached 20,000 pieces of linen, “a quantity that had never been equalled before, and probably would never be equalled again.” The hero of the incident would be not a little surprised if he could find himself standing to-day in Glenmore with its weekly output of 6,000 pieces, or over 300,000 pieces per annum.

It is recorded that there were eleven bleachgreens along the river Lagan in 1784, and that three of these turned out 24,000 webs that year, one finished 10,000, and another bleached 8,000. One of these referred to was doubtless Glenmore. But in the early part of the present century, a marvellous increase was made in the output at Glenmore by the spirited enterprise of one of its proprietors, which, at the same time, gave a powerful stimulus to the entire bleaching trade of Ulster. At that period, bleaching, as has been said, was carried on only between the months of March and October, as it was then thought that the frost would destroy the cloth. Jonathan Richardson, one of the

predecessors of the firm of J. N. Richardson, Sons & Owden, introduced winter bleaching, his brother bleachers utterly discountenancing his action, and ridiculing the idea that such was practicable. Fortunately, Mr. Richardson was not to be deterred by their disapproval, and his efforts were attended with success. From that time the history of the business at Glenmore has been one of continuous and expansive growth, until it has attained the magnificent dimensions of to-day.

Of Glenmore of the present—its vast extent; its splendid machinery, embracing every appliance that modern skill and latest invention can suggest; its unrivalled water-supply; and the many interesting processes through which the fabrics pass—it is impossible to speak here at the length, or in degree of detail, that the subject would deserve. There are, indeed, many minor matters, or what are regarded as such, that would in themselves merit lengthened description, did space permit. Of such are the manufacture of gas for the various machines; the machinists' and carpenters' workshops, wherein are manufactured many things, small and large—amongst others, the immense beechen calendar-rollers, rival-

ling in perfect smoothness the polished metal against which they revolve ; the traffic arrangements, and other matters of interest.

The water-supply, however, demands more than a passing notice, for to it, and the scientifically-constructed arrangements connected with it, much of the success of Glenmore bleaching is due. Through the midst of Glenmore flows the river Lagan, from which an unlimited supply of water is drawn, and made to pass through filtering beds of five acres in extent before being used. Flowing through these natural filters, the water of the river has arrived at a condition of purity before being applied to the roughest or most ordinary process. In addition to this, and for special use in the later and more delicate processes of the bleaching, Glenmore possesses a large reservoir of pure spring water, 16 to 20 acres in extent, at a place called Lisnatrunk, about a mile away. From the reservoir at Lisnatrunk the spring water is brought part of the way in channels, the remainder of the distance in pipes, crossing the river and mill-race, and rising by natural gravitation to special filtering beds composed of sharp granulated sand, procured in Lough Neagh, and brought down the canal to the works in lighters. Repeatedly filtered here, the spring water attains that condition of perfect softness and absolute purity which renders it so invaluable.

Of the classes of goods bleached and finished at Glenmore and Millbrook, it is almost enough to say that they are known wherever "Richardson's linens" are known—that is to say, all the world over. Handkerchiefs—linen, linen cambric, and fancy—form an important branch of the work, the immense turnout of these being largely assisted by the fact that a number of the processes formerly carried out by hand have within recent years been done entirely by machinery.

So also do hucks and towels, of which latter the variety we see in process of bleaching is endless. Here are huck towels, huck towels with damask borders, damask towels with plain borders, coloured borders, and with crests, names, initials, &c., interwoven. Glenmore is noted for this class of work, a special method being employed which keeps the fringes smooth, straight, and even throughout.

Every description of plain linen is being bleached and finished here, from fine frontings to extra heavy household linen, and from pillow linens to superior Irish sheetings 135 inches in width. In this department a speciality for which the firm has become widely celebrated is their "ivory finish" in linens for buttons.

The chief interest of most visitors will centre in the bleaching of damasks, for the finishing of which every modern improvement and appliance that money can procure or ingenuity suggest has been obtained. Interesting it is to see the vast piles of every description, up to fine double-damask cloths, of rare beauty of design and perfection of texture, 16/4 and 17/4 in width and of length in proportion, as they undergo the many operations through which they pass. As befits fabrics so costly, they are manipulated with no ordinary care, and are treated in a special way, the object of which is to keep them as heavy as possible in handle, and at the same time perfectly sound and strong. The success of the Glenmore Bleachworks in this respect has become a matter of trade history.

To meet the demand which of late years has sprung up, and increased enormously, for made-up, embroidered, and hemstitched articles, such as pillow and bolster cases, pillow shams, toilet covers, bed covers, mats, doylies, fancy-work damask cloths, and others in endless variety, an extensive laundry has been fitted up at the works, in which the newest appliances for the proper finishing of goods have been introduced, and where a large number of women are employed.

In the bleaching and finishing of all classes of goods the utmost care is exercised. At various stages of work the goods undergo careful and minute examination before being proceeded with further. The chemical part of the business, and the preparation of the various solutions, is under the care of an experienced chemist. So particular is the firm to avoid even the possibility of injury to the fabrics, that every material used in bleaching is tested as it comes in, and checked in testing ; and as the "kieves" are made up to the required strength, each separate solution receives a further test. An interesting endorsement of the thoroughness of the Glenmore processes was furnished some time ago by the Chemical Section of the British Association for the Advancement of Science. The Association had paid several visits to Glenmore when in Belfast, and on a late occasion the Chemical Section paid a special visit and were much interested in observing the Glenmore processes. Of these, several members spoke in the highest terms, Professor Andrews, F.R.S., saying he could suggest nothing that could add to their thoroughness and efficiency.

It is difficult to give an idea of the extent of the business at Glenmore. We have given the annual turnout as being over 300,000 pieces. The brown room is capable of storing 30,000 pieces, and the white stock-rooms a quantity greatly exceeding this number. The reader can imagine the extent of the works that permit of the handling of such vast quantities of goods in detailed and separate lots. The illustrations represent but a portion of the extensive buildings and spread-ground.

Our space is exhausted, and we have but to add that the great firm of J. N. Richardson, Sons & Owden (Limited), at Belfast, Glenmore, Millbrook, and Lurgan, and its numerous branches in other lands—in its hand-loom and power-loom manufacturing, bleaching and finishing, and mercantile branches—stands to-day on a higher plane of commercial greatness than at any past period of its long history, and is an institution of which Belfast and Ulster are justly proud.

(Continued from page 30.)

other Irish makers might follow their lead with advantage. Smart, well-made tweeds of good weights, and something of the Donegal or Mayo make, will, it is said, go freely again for ladies' fishing, shooting, and sea-side suits. For travelling wraps, heavy bold-twilled tweeds are still much sought after. A growing trade on this side of the channel is that of rugs and plaids. The Convoy Woollen Company, Limited, Donegal, produce very fine goods in this way ; and some choice lines in rugs, &c., are being made by Boyds at Ballylorne, Lame. The bulk of the trade for these goods has hitherto been done by Scotch manufacturers, and the leading tailors and outfitters in the Scotch towns sell large quantities in the season to tourists and sportsmen. It is gratifying to know that Irish makers are taking a strong lead, alike in texture, style, and finish, in these goods.

THE IRISH COTTON TRADE.

Cotton Yarns.

ABOUT three or four weeks ago there was a wavering in the price of cotton warps, resulting in a slight decline ; but latterly things have become firmer, and at the present time rates are steady all over. The imports into Ulster during the past month have been much heavier than usual. These, however, have not been the outcome of any recent improvement in the demand, but rather the shipment of the balances of lines placed some time back. Manufacturers, in consequence of the high rates, are now only buying to cover immediate wants, and that too with a marked degree of caution, as some are of opinion that as soon as the strike has been definitely settled there will be more yarns on the market, and therefore less strength in price. The production has fallen off somewhat during the past fortnight, as something like two millions of spindles have stopped working in order to facilitate the settlement between the employers and the operatives, and this has no doubt brought about the recovery already referred to. There is, however, another aspect of the position to be taken into account, for, as soon as the mills have resumed work, the raw cotton held by the brokers and dealers will jump up in value, and so counteract to a great extent the anticipated decline in price consequent on the increased yarn production. This will help materially to equalise matters, so that no marked change one way or other can be counted on with confidence or certainty. The manufacture of union goods continues to develop in this part of Ireland, and the goods themselves are making great headway with the general consumers. Union shirtings have improved considerably both in demand and price during the month. Union towels are also growing in favour, as well as union creams and interlinings. There has been also a strong run on cheap union crashes for export, as well as on some makes of household goods.

Cotton Goods.

The import of cotton cambrics during the month has been moderately good, but fresh orders have been greatly restricted. Some buyers are strong in their conviction that the current rates (which now show an advance on the lowest level of one shilling to two shillings per piece, according to make and quality) cannot be maintained, and are therefore limiting themselves to immediate requirements ; besides, the sale of cotton handkerchiefs of all sorts is only going on slowly, so that there is no especial need at present to lay in too heavy stocks.



Irish.

DUBLIN.—The linen market is in a normal condition, with really no change of any significance to note since last writing. Prices are firm, and the position is strong ; and, though there has been no advance in prices, the tendency is in an upward direction. In woollens, business on the home account is stagnant ; but for export, business in woollen manufactures has been satisfactory ; and though the market for the raw material has been slack for some time past, yet this has not materially affected the prices of wool, which have kept firm. The supply and demand are limited, and the latest prices to hand are :—Downs, 10½d. to 10¼d. ; hoggets, 9¾d. to 10¼d. ; ewe and wether, 9d. to 9½d. ; seaside, 8½d. to 8¼d. ; mountain, 7¾d. to 8¼d. ; Scotch, 6d. to 6½d. Silks and poplins unaltered. Most of our big retail houses connected with textile wares have declared their dividends, and all appear to be flourishing. M'Birneys pay 6% ; Switzer, 6 and 8% ; Ferrier Pollock, 5½ and 6% ; Arnott's, 8% ; J. & H. Webb, 5% ; Cannock (Limerick), 8%.

The Irish Woollen Manufacturing and Export Company, Limited.

This Company has, at the close of the year, found itself in a position to pay 6% for the last six months, making, with 5% paid *ad interim*, a return for the year of 5½% on the capital. The finances of the concern seem to be in a very satisfactory condition, as the dividend by no means swamps the available cash. £300 have been placed to credit of the Reserve Fund, and £200 and odd carried forward. The chairman, Mr. Mayne, in moving the adoption of the report at the annual meeting, congratulated the shareholders on the state of the affairs of the Company, which he said were very encouraging. He pointed out that, notwith-

standing the restrictions of the M'Kinley tariff, the Company's export trade had not diminished, as they had succeeded in opening out a large and remunerative business on the Continent. No one who is at all interested in the welfare of Irish manufactures but will be pleased at the success achieved by this Company. It deals only in Irish manufactured goods; buying from Irish mills, or having its cloth specially manufactured to order by them. At one time a very large trade was done with America, but since the passing of the M'Kinley Act the Company has had to look out for other markets. These it has found in England, Scotland, and on the Continent, and it is to be congratulated on the energy with which it has opened them up, and which has enabled it to go on on its prosperous career, notwithstanding the economic ideas of Major M'Kinley, which, however much they may benefit American manufacturers, are certainly not to the advantage of the Irish woollen mills.

Mr. Ben. Lindsey.

It is with sincere regret that I have to mention the death of Mr. Benjamin Lindsey, a gentleman who had been for many long years closely associated with the lace industry of the country. Mr. Lindsey was a man of very great business capacity, of shrewd intellect, and of strong and tenacious opinion. In the world of lace-makers and lace-buyers he was well known, and in his place of business in Grafton Street were always to be found some of the best examples of Irish lace manufacture. With the Convent lace school at Youghal, unless I am very much mistaken, Mr. Lindsey had very large dealings; and of late years he had founded a school of crochet work at Clones. The writer of these notes often differed with Mr. Lindsey on matters connected with the Irish lace schools, particularly on the subject of the utility of art training and art designing in connection with the commercial prosperity of the schools. I believe that of late years Mr. Lindsey had come to recognise the market value of good new designs, and was not slow to become possessed of such, and have them worked out by capable lace-makers. With the Science and Art Department of South Kensington the deceased gentleman had an old and standing quarrel; death has now ended it, and I feel sure no bitterness remains on the side of those who during his lifetime differed with Mr. Lindsey. Many a poor worker will feel his loss acutely, and his advice and sound business capacity will be missed by the many associations with which he was connected.

Limerick and Chicago.

I understand that two hands from the Limerick Lace School are to be sent to Chicago for the purpose of working lace on the spot during the Exhibition, and also to give assistance in arranging and disposing of the consignment of laces which will be on view from Limerick. This, of course, will entail a considerable outlay, and a committee of citizens has been formed to raise the necessary amount by subscriptions. The efforts now being made to further develop the lace industry in Limerick should meet with the cordial support of the inhabitants of that city. As a matter of fact, the orders for Limerick laces exceed the supply, the number of hands available being inadequate to cope with the work. Endeavours are being made to train a number of young girls to the work, and it is proposed to send two of them to Dublin, so that their training may be thorough, technically and artistically. This will also involve some outlay, as the Lace Committee will have to pay the expenses of those girls, and for this purpose funds are also required. Messrs. A. W. Shaw, R. Gibson, J. Quinn, T. H. Cheve, W. L. Stokes, and D. Tidmarsh, will be happy to receive contributions, either large or small.

Exhibits for Chicago.

The opportunity of seeing the lace and embroidery exhibits for the Chicago Exhibition was such an extremely brief and curtailed one to Dublin residents, that I must to a great extent depend upon others for my description of them. I mentioned last month some of the work being sent from the Kenmare Convent, and I can now say that the embroidered chasubles which have been executed at this school to the order of Cardinal Gibbons are attracting a very large amount of attention. The order comprises a complete set of chasubles, following the sequence of colours as ordained by the rubrics of the Church of Rome. The ornamentation is all of pure Celtic design; and one white brocaded vestment has met with the highest approval from the best judges. From Youghal there will be on view at Chicago a cream white bridal costume of Irish poplin, shot with gold and trimmed with needlepoint lace, with veil, handkerchief, and fan *en suite*. There is a bed-cover in Greek point lace sent by Mrs. Dyer, and a baby's robe covered with embroidery. The ecclesiastical designs in lace are artistic and novel, and as most of them are the work of students in the Dublin Metropolitan School of Art, that institution and its head master may well be proud. By the way, though it has nothing to do with lace or Chicago, I may mention that Mr. J. Brennan, R.H.A., the aforesaid head master, may also be proud of his own art exhibits at present hanging on the walls of the Royal Hibernian Academy, whose annual *salon* opened to the public on the 6th inst.

The Technical Schools.

The Governors of the Dublin Technical Schools have received, through the town clerk, a communication from the Science and Art Department, South Kensington. From this I gather that the Lords of the Committee of Council on Education have been graciously pleased to sanction by minute certain subjects of instruction for the City of Dublin, the "certain subjects" in question being practically those included in the Kevin Street curriculum. The Lords of the Committee, etc., however,

issue this minute "on the understanding that the instruction in the subjects specified will be confined to showing the students the best methods of working, and practising them in those methods so far as may be necessary for such instruction. Any instruction which goes beyond teaching the principles involved, or in which practice is extended, with a view to give the manual dexterity of a workman, is contrary to the Act"—that is, the T. I. Act of 1889. "I am to add," concludes the writer of the letter on behalf of the Lords, etc., "that the Department cannot sanction commercial penmanship, although it may be held to be included in other subjects sanctioned, e.g., bookkeeping." The whole communication is of Government departments departmental, and I only hope that the Lords of the Committee, etc., are satisfied with themselves—not that I ever heard of their being in any other sort of humour.

English.

BARNSELEY.—A cheerful feeling has pervaded the linen trade of this district, with the exception of fine makes of damasks, there having been an improvement in demand in most departments. The table linen branch has only been quiet, and the expectations of the producers of the thinner makes of fabrics, which were hopeful a few months ago, have not been fully realised, although a fair business in them has been done on the whole. Bed linens have sold fairly well, tickings having taken the lead. Carpetings and floor coverings generally have sold moderately, as have fabrics of a mixed description of yarns, the latter having been produced in lesser quantities, owing to the difficulty of procuring cotton yarns at reasonable prices. Huckabacks have sold freely in the piece, and also in lengths for towellings. Fancy towels in typed styles and also waiter cloths have had a good demand, as have narrow fabrics generally. In these goods some very neat and effective designs are being produced, both in white and coloured materials, initialled fabrics meeting at present with much favour. The production of drills in fancy and plain styles has recently increased, with a corresponding demand. Prices of nearly all classes of goods have shown but little change.

BRADFORD.—In the wool markets there has been a good consumptive demand for English wools, at rather higher rates than were prevalent a month ago; but there has been a rather quieter feeling as regards Botany wools. Stocks of the raw material in staplers' hands are not heavy, and the consequence is that wools generally are held firmly, both in the manufacturing districts and also among farmers. In yarns, there has been an improvement in demand for English yarns, and spinners are mostly working full time on orders that will last for the next few weeks, and the prospects for the future are much brighter than has been the case for some time past. In the piece branches there has been a slight improvement in some departments, the orders for dress goods for the Continent having been given out in larger numbers and quantities than manufacturers hoped for at the beginning of the year. The coating branches have kept up fairly well, the exports to the United States having again been in a decided advance upon February of last year, whilst for export generally a fair business has been done. There is a hopeful feeling that with the new President in power the trade with America will improve considerably during the present year.

LEEDS.—Business in the woollen industry of this district has been rather disappointing during the month. The hopes indulged in at the commencement of the year—that there would be a satisfactory business—have not been realised, and generally there is a want of animation in most branches. The finer makes of worsteds, in fancy styles and good designs and colourings, are selling fairly well, and there is still a good demand for serges in various styles and qualities; but, with these exceptions, it is a matter of difficulty procuring orders with much margin of profit. In tweeds and chevots a fair number of repeat orders for the summer have been given out, the chief of which have been in the lower makes of fabrics. This has been the means of disposing of some stocks, and leaves manufacturers free as regards new work. In the mantling trade there is little new to note, there being a very quiet feeling generally, unless for goods of a novel character. Manufacturers of this class are much exercised as to what to turn their attention, as their new patterns bring but little new business. In other makes of fabrics, such as meltons and goods of that class, there has been a rather quieter feeling, and, in common with most kinds of cloth, prices are being cut very fine.

MANCHESTER.—The condition of business in this district is still depressed, both in the home and shipping branches. Messrs. J. T. Wilkinson & Co., one of the leading firms of packers in the city, have been compelled to call a meeting of their creditors owing to the continued dulness in the shipping trade, in which the firm took some part. At a meeting held on Monday the liabilities were set down at £90,000, a sum larger than had been anticipated. The affairs of Messrs. Tosh & Ashton, woollen merchants, have also been the subject of considerable discussion in the city, several creditors interested in the failure being local houses. Both partners in this house are well known in Manchester. They were formerly in the employment of the Glasgow concern of Stewart & M'Donald, and have been regarded as two exceptionally able home traders. The failure of the house has brought down a firm in the Midlands and two concerns in London, the aggregate liabilities being estimated at £300,000, on which a dividend of 10/- in the pound is expected. The prolonged depression in the shipping trade has again brought for-

ward unsatisfactory rumours regarding the position of houses engaged in the South American business. A large firm on the West Coast, transacting an extensive Chilean trade, has formed the subject of much comment, without, we believe, any substantial grounds existing for such rumours, which appear to have originated in London, where idle gossip on commercial matters has become much more frequent since the advent of the financial newspaper.

The linen trade has been rather quiet during the month, although buyers are disposed to operate more freely now that the advance in prices generally has become so marked. Sellers have become emboldened to ask for higher prices, which average a farthing a yard on some classes of goods. In this they have followed the example of sellers of linen yarns in the North of England, who have secured more orders during the past four weeks than during the preceding three months, notwithstanding the increased prices asked. This activity will, it is expected, be followed by a lull during the next few weeks. The condition of the home trade is such that merchants have great difficulty in disposing of stocks. A case in point was afforded this week by the experience of a traveller for one of the largest home trade houses. This gentleman made calls upon eighteen customers in one day, and, as a result, booked orders for three half-pieces only! It is not often that a well-known commercial, with a good connection, has such an unsatisfactory experience.

The fire at the works of the Openshaw Oil Cloth Company temporarily embarrasses a large buyer of the jute backings which are used for these goods. The jute trade has been adversely affected by the prices of raw material. Linen, on the other hand, has benefited from the condition of the market for cotton and jute, although the scarcity of flax has apparently assisted to nullify in some degree this advantage.

Belfast and Manchester freight rates for bale and case goods are now so low that the utmost facilities appear to be afforded towards the encouragement of a larger trade between the two centres. Half-a-crown a ton is a rate which cannot be considered out of the way, and facilities for shipment *via* Saltport lessen the cost of transit considerably. The traffic manager of the Ship Canal informs me that, on the completion of the undertaking, a line of steamers from the Manchester and Salford docks direct to Belfast will be one of the first matters to receive attention.

Although linen thread prices are unchanged, sellers appear to think that an advance by mutual agreement amongst the trade would be justified in view of present prices of materials.

Your readers will have observed the result of the debate in the House of Commons on bimetalism. At the headquarters of the League here the proceedings at Westminster do not appear to have produced anything akin to a feeling of dismay, and I am assured that the League will continue its work more vigorously than ever. One of the smallest answers from the bimetallic standpoint that I have heard, when the objection has been urged that to support the proposals of the League would be to tamper with the inflexible laws of political economy, is that of a Manchester merchant, who thus summarises such arguments:—"We are going to the dogs fast: let us go. There is no remedy against death."

While arguments on both sides are being so freely brought forward, the staple trade of Lancashire remains in a state of partial paraplegia. On 'Change there is little doing in the way of genuine business, and old frequenters of the "boards" walk about with serious faces, glancing listlessly at the telegrams or newspaper files, which bring no news of the hoped-for settlement. "What is troubling us," said a venerable grey cloth agent to the writer on Tuesday, "is over-production. It is 'water, water, everywhere, and not a drop to drink'—or 'too many shirts, and not backs enough to wear them.'" In the meantime, the stubborn struggle for mastery between the operatives and the masters proceeds, the funds of these being dissipated, the capital of those shrinking from week to week.

LONDON.—Since my last report business has been slowly improving; and should the weather conditions remain as favourable even as they are at the time of writing, the houses hope to be able to turn out a large amount of goods in view of the Easter holiday trade; but it will take a great deal of extra pushing to keep the spring trade up. There is, unfortunately, at the present time, a tightness of money among consumers of the more industrious class. The millions which are locked up in building societies were at this time last year paying their investors handsome dividends; while the prolonged strikes in the manufacturing districts are indirectly affecting business even as far south as London. The collapse, too, of a number of important houses in the dry goods trade, both retail and wholesale, is creating a want of confidence in the city. Hardly a day passes now that we are not warned of an impending crash; but I do not, from my knowledge of the market, share in the belief that matters are anything like so serious as they are painted. What we have been passing through during the last few weeks was not unexpected in some quarters, though it never was expected that matters would have turned out so badly. Fortunately for the Belfast trade, few, if indeed any of the Ulster manufacturers will share in the losses; and, as the amounts are distributed over a very large area, I do not anticipate even an indirect influence upon the linen trade. The Australian trade gives very little evidence of improvement, and some of the more extensive merchants have been instructing their buying offices in London to curtail expenses as much as possible, and, in some cases, cancelling a large proportion of the orders already placed with manufacturers. The Queensland calamity has also

largely increased the prevailing depression, and it is indeed becoming very serious with some of the Brisbane houses. Messrs. A. M'Arthur & Co., of Sydney, were declared the purchasers of the extensive stock of Messrs. Wm. Perry & Co., of the same town, which amounted to about £78,000—their tender for £50,000 being accepted; several other houses also bid for it, and the sale was reported a spirited one. Messrs. Josolyne, Miles & Blow, of 28 King Street, E.C., who are the liquidators of the affairs of Messrs. Perry, hope, within the next six weeks, to be able to declare a first dividend in this matter. Reports from the New Zealand markets are very hopeful, and most of the larger city houses are pushing this end of the export trade. From the Canadian markets, advices received from week to week speak also of a most promising season; though, at the time of writing, the connections with the outlying districts are in a measure blocked by the very heavy snowstorms which have prevailed, more intense, I understand, than have visited the Dominion for some years past. The Cape and South African trade generally continues in a prosperous condition; but this appears to be a market not of much interest yet to the Belfast manufacturers, although of late some of their agents have been pushing for a share of the linen business, which, in centres such as Pietermaritzburg, Capetown, Port Elizabeth, must be of considerable importance. Up to the present it has been largely done by the export merchants here; but one Belfast house, not satisfied with the business which they individually were receiving, despatched a representative to reconnoitre quietly, but he returned not too favourably impressed as to the opening for a direct trade. In Milk Street, in some departments, business is reported fair; the shirt-makers have orders on hands for the home trade which they do not expect to be able to complete till the end of spring; and the majority of the houses are working full time, some overtime. A large proportion of these goods is intended for the home trade. Buyers in the distributing houses cannot be tempted to do much business at the present time, and are waiting to see how the market will turn before they place orders of any importance: they are not yet convinced of the upward tendency of the linen market. In this connection I may remark that one of the largest buyers in the Lyons market for a London house declined, in the face of the most positive proof of the very heavy advance in raw silk, to place orders two months ago; to-day he is almost stranded, and cannot buy with any hope of competing with houses in his own line. Among the tailors' trimming houses business is reported to be healthy; and some good lines for linings, etc., have reached Belfast houses through their agents. The damask trade is quiet, but will look up during the coming month. In the cambric handkerchief trade a fair amount of business is being done; while, in anticipation of a rise in cotton goods, some large orders are expected; fancy goods are leading. The collar and front trade, which is being pushed by several Belfast houses, is making steady progress in London. There is no reason why Belfast should not control a much larger share of this business than it has up to the present. A little more energy might be displayed in this direction; and I would advise manufacturers who want to get a good hold upon the market not to be too satisfied with their representatives or agents here, but to make a special feature of visiting the markets as often as they can; the London houses like to see the men from the spot, while it gives the agent what, in the polite phraseology of the trade, is called "a leg up." The Somerset and West of England manufacturers, who compete strongly for the collar trade in the city, are to be found almost once a week careering round the city houses; and while Belfast houses could not do this so easily, still they could, with profit, visit London oftener. There are few changes to chronicle during the month; but Messrs. Blake, Kells & Co. inform me that they have secured the premises, No. 2, Bow Lane, their former warehouse being quite too small for their business. Mr. Kells is an Ulster man who, a few years ago, joined Mr. Blake as a distributing house for tailors' linens, etc.

Continental.

BIELEFELD, March 10th.—Yarns.—Owing to the considerable advance in flax, the German spinners were compelled to issue higher prices at the beginning of the year, and have formed a convention to carry them better through. Stocks being small and demand lively, spinners have not met with difficulties to obtain the higher rates. Further advances will likely follow. Linens.—In consequence of the higher prices of yarns, both for the coarse inland and finer outland spins, all the manufacturers of coarser as well as finer makes (hand and power loom linens) have advanced their prices. If prices of yarns will maintain their present stand, or even go still higher, prices of cloth must be further advanced in a short time, if manufacturers will not work at a loss. Upon this point especial stress must be laid in consideration of the position of the manufacturers of finer hand-loom cloths, who during the past year have been obliged to pay higher prices for yarns at short intervals, without having been able to obtain anything like corresponding prices for the cloth. Demand has been satisfactory in general, stocks are of small compass, and power-looms are in full activity. Manufacturers are looking with confidence to the further development of business for the time to come.

LANDESHUT, March 7th.—During the past few weeks the tendency of the yarn market has steadily grown very firm, and the advanced prices demanded are now paid willingly. At these prices large contracts were made at the Exchange on the 1st inst. For tow yarn higher prices were asked. In flax only little is offered, and at very high prices. Power-looms hereabout are all well employed, and manufacturers have orders in

hand also for hand-loom, which still turn off a good production. The prices for manufacturers of goods are not paying, as they do not correspond at all to the high yarn prices. Next Exchange will be on the 5th of April.

LEIPZIG, *March 10th.*—Nothing special since last month. Prices of German and Irish yarns on this market are firm, if not advancing; but spinners seem willing to engage at present rates.

United States Market.

(From our Special Correspondent.)

NEW YORK, *February 28th, 1893.*



THE present Congress, now within a few days of its final adjournment, may do a good turn for our linen importers, after all. The bill introduced by Representative Springer, extending until January, 1895, the time for imposing the 50 per cent. rate upon all counts of linens, passed the House yesterday by a unanimous vote. Charybdis and Scylla are yet before it—the Senate and the President. It may be lost in the final shuffle; but Belfast will know the fate of it before this letter appears in cold type, and the linen men will have the consolation of knowing, whatever may happen, that they did all that men could do in behalf of their cause. Not the least portion of their labours was the addressing of circulars to every leading dry goods house in the land. There will be three good damask exhibits at the Chicago Exhibition. John S. Brown & Sons' intentions have been reported. Now we learn that J. N. Richardson, Sons & Owsen are to give us fine expression of their loom products. William Liddell & Co. will do likewise, and George Riggs & Co. will make a showing of their famous "Old Bleach" towels and towellings. Possibly James Girdwood & Co. will exhibit their damasks, and Richard T. Webb's towels and towellings, known as the "Dew Bleach" goods.

We have learned with some surprise that exportations of linen piece goods from Belfast to the United States during the month of January exceed those of January, 1892, by about 33½ per cent. Indeed, the value of all imports of dry goods for this January is much in excess of the value for January, 1892, and the fact bears out the story that the general dry goods business of this country never was in better condition than at present. As far as cotton fabrics are concerned, all our commission houses are in the state known as "sold ahead," and our mills are being driven to their utmost capacity. Their representatives—the commission houses—are as independent as should be expected of men who have the game in their own hands, and buyers have the alternatives of waiting patiently until their orders are filled or going without. Cancellations are welcomed. Cotton is king in its own land.

It is every man's privilege to make sales of his wares wherever he can find a market that will take them; but our handkerchief men, who pay rents, travelling expenses, and State taxes and salaries to necessary staffs of employés—from porters to high-priced salesmen—view that as an abstract sentiment when the concrete fact faces them in the shape of visiting envoys from Belfast, who come over here twice a-year for direct orders from our big retailers and jobbers, and book them at sterling values below importers' landing costs. They can well do it, for all the handicap they have is the single one of travelling expenses. So our boys are kicking earnestly about it. They want home rule in *this* matter,—and let Ulster take care of itself.

Now that the Swiss have about absorbed the embroidered handkerchief trade, our handkerchief men are giving strong attention to plain linen cambric goods, hemstitched and hemmed. Here, at least, they have the satisfaction of fighting with their own kin; and the way some of them are "welting" the "sowls" out of each other is a caution. Ever since the revival of trade that followed our civil war, there has been an over-supply of linen handkerchiefs in this market. So it is now, and the moving of large lots under the guise of "jobs" goes on as ever. Every buyer carries a counting glass, and "sets" of plain handkerchiefs are discussed just as the counts of web linens are. A revival of interest in prints has stimulated the trade considerably.

Good trade among the Troy collar manufacturers keeps 4/4 linens well in the movement. That is to say, shipments are being made in satisfactory measure; and prices are at no regular scale, for deliveries are made on placed contracts, some overlapping each other. To-day's price lists are not in keeping with present Belfast standards, and although importers are well backed-up by late home advices, the man who deliberates over "a strong cable just to hand" will be lost while he deliberates; the disposition is to let no big contract pass. It is not fair for Belfast men to tie their agents here with restricted lists, and "club" them at the end of the year for shrinkage of business.

We observe that the *Textile Journal* is to publish a series of views representing phases of the Ulster linen industry as it existed 100 years ago. They will be looked for with interest. The old *Dry Goods Chronicle* (weekly) has been purchased by the company that published that dainty monthly, *The Mercer*, and the latter has been incorporated with the former. There will be a special linen department, and new life infused generally.

Book Notices.—Unavoidably held over till next month.

Chemicals and Dyes.

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

BUSINESS in the leading chemical products is bad. Experienced men say they have never seen anything like the present "lagging" in trade at this time of the year. All kinds of Alkalies are weak, and buyers are able to purchase very much on their own terms. There is most severe cutting in Soda Ash, and it looks, after all, as though the great combination will not be able to maintain the price at any rate of this, one of their principal products. The one redeeming feature in the market is the excellent demand and the improved price of Bleaching Powder, which is difficult to get for prompt delivery. The same important outlet is affecting the value of Coal Tar Acids. Carbolic Acid, and other disinfecting Coal Tar products, are in capital request, at improving rates. The same, however, cannot be said of the other Tar products, which, with the exception of Anthracene, have steadily declined in value for several months; and although there is a good trade being done in Tar Dyes, including Alizarine, manufacturers complain bitterly about low prices. Aniline Oil has never been cheaper than it is now, and whether this will increase its use is interesting inquiry for those affected by it. In general chemicals there is a distinct slackness; but Nitrate of Soda continues to improve in value, although no great business is being done. Oxalic Acid also sells moderately well at 3d. Sulphate of Ammonia and other Ammonia products have picked up remarkably well during the past month, Sulphate having improved in value 20s. per ton, and looks as if it will yet be dearer. Sulphate of Copper, Borax, Tartaric and Citric Acids, Chlorates, and Bichromes are all moving off slowly; but makers complain that they cannot secure orders to cover production. Prices.—*Dyes*—Alizarine, 8d.; Aniline Oil, 6½d.; Aniline Salt, 6½d.; Magentas, 2/- to 3/-; Scarlets, 1/3; Chrysoidine, 2/-; Blues, from 3/-; Picric Acid, 1/-. *Ammonias*.—Liquid Ammonia, 1½d.; Carbonate of Ammonia, 3d.; Muriate of Ammonia, £16 to £22; Sulphate of Ammonia, £11 10s. *Alkalies*.—Bicarbonate of Soda, £7; Caustic Soda (77), £10 10s.; Soda Ash, 1½d.; Caustic Potash, £19; Sulphate of Soda, 25/-; Soda Crystals, about £3. *Sundries*.—Tartaric Acid, 1s.; Citric Acid, 1/6; Oxalic Acid, 3d.; Tin Salts, 5½d.; Sulphate of Copper, £15 10s.; Bleaching Powder, £8 5s.; Borax, £27; Nitrate of Soda, £9 10s.; Carbolic Crystals, 8d.; Epsom Salts, £3; Bichrome, 4d.; Benzole, 1/9; Solvent Naphtha, 1/4; Cresol, 2s.; Pitch, 27s.



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.

S. & W. HUNTER & J. MACKIE, Belfast, No. 1,430—"Machines for spinning flax," &c. 23rd January, 1893.

E. MEEMIER, London, No. 1,466—"Gill box apparatus for combing and drawing machinery." 23rd January, 1893.

D. M'COLLUM, Belfast, No. 2,289—"Threading shuttles of looms for textile fabrics." 2nd February, 1893.

A. M'MEERIN, Doagh, No. 2,292—"Wet spinning flax," &c. 2nd Feb., 1893.

P. HARROP & J. GARGAN, Yorkshire, No. 2,645—"Mounting strokers in 'Noble's' combing machines." 7th February, 1893.

T. H. WHARTON & H. MONIES, Yorkshire, No. 2,929—"Improvements in 'Noble's' and other combing machines." 10th February, 1893.

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.

1892.

DOBSON & HILL, No. 3,396—"Reeling and winding yarns." 21st January. ASHWORTH, No. 21,323—"Splitting warps." 21st January.

G. E. DONISTHORPE & T. BURROWS, London, No. 371—"Improvements in machinery or apparatus for softening, opening, and otherwise treating or preparing flax, hemp, China grass, silk, or the like for the combing and spinning." January 7th.

G. E. DONISTHORPE & T. BURROWS, London, No. 2,168—"Improvements in machines or apparatus for breaking, scutching, and decorticating flax, rhea (China grass), and similar fibres." February 4th.

EVES, No. 4,170—"Spinning frames." 28th January.

WHITELEY AND OTHERS, No. 4,182—"Drying wool," &c. 28th January. SHARROW, No. 22,028—"Heating air by steam." 28th January.

M. M. GREEVES, Belfast, No. 3,647—"Improvements in clearers for yarns." 24th February.

R. T. WEBB, Newtownards, No. 5,153—"An improvement in the process of hemstitching linen, cotton, union, or other fabrics." March 16th.

HETHERINGTON, No. 8,679—"Carding machines." 4th February. G. S. V. GODFREY, Hastings, No. 20,104—"An improved linen shirt." November 8th.

GERMAN APPLICATIONS.

GEORGE E. DONISTHORPE, London, and T. BURROWS, London, No. 5,417D—"Improvements in drawing rollers applicable to long fibrous weaving material." 28th October, 1892. Also, No. 5,492D—"Improved machine for breaking, stripping, and scutching flax and similar fibrous material." 14th December, 1892.

EUGEN PERSIL, Paris, No. 5,962P—"Circular loom." 7th October, 1892.

FRIEDRICH GEBAUER, Charlottenburg, No. 7,799G—"Boiler applicable for use in the treatment of textile substances with fluids, for the purpose of bleaching, dyeing, and purifying the same." 5th November, 1892.

B. SCHILDE, Hersfeld, No. 8,421 Sch.—"Improved spindle for thread." 23rd November, 1892.



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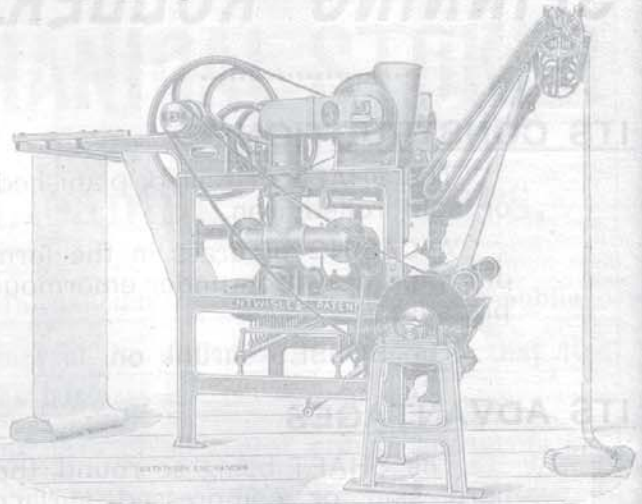
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The SHAFT of reeled, planished, or cold rolled iron.

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The BOSSES shrunk on.

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The most useful and durable machine before the public.

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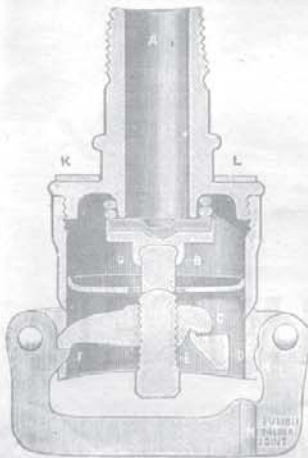
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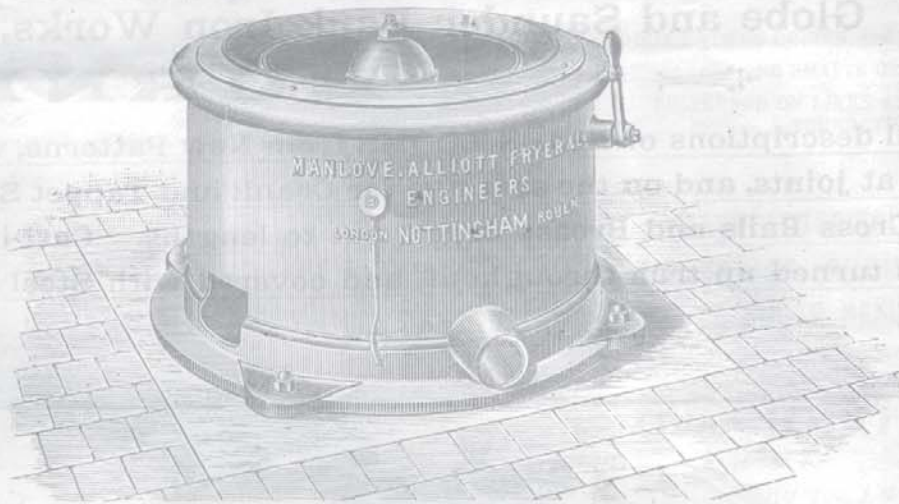
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3. Shafts of greater diameter than usual.

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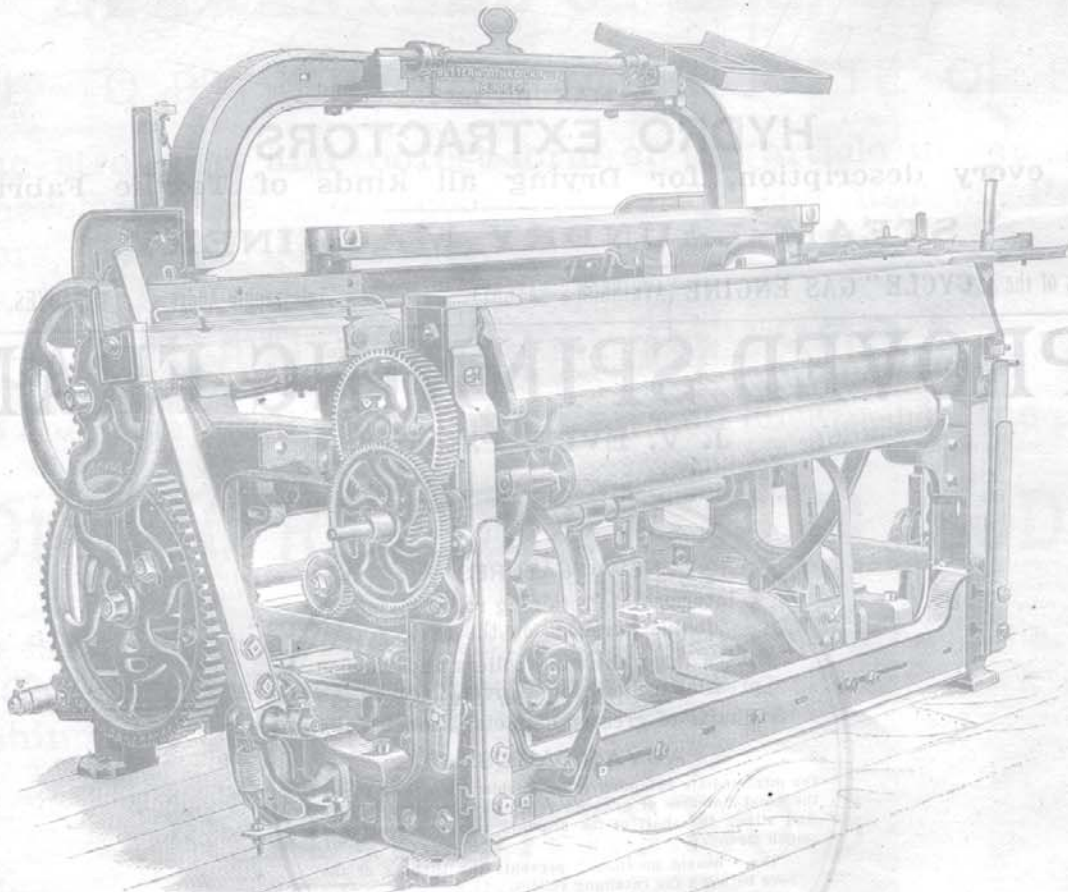
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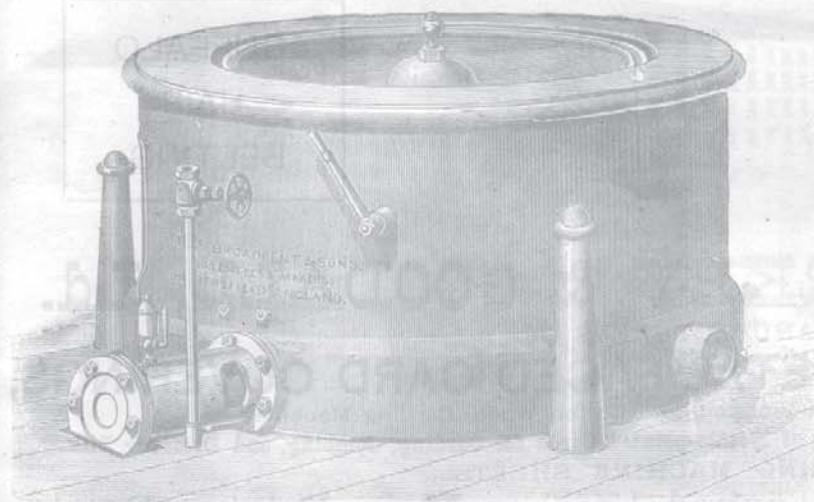


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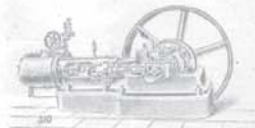
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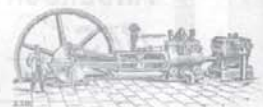
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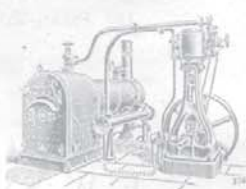
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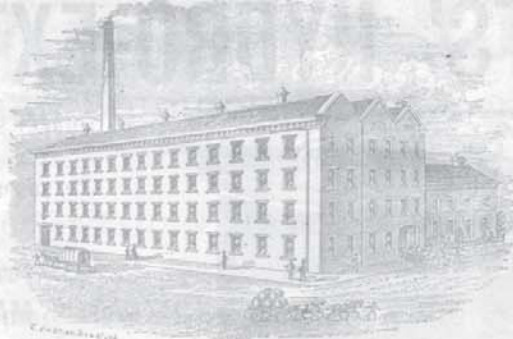
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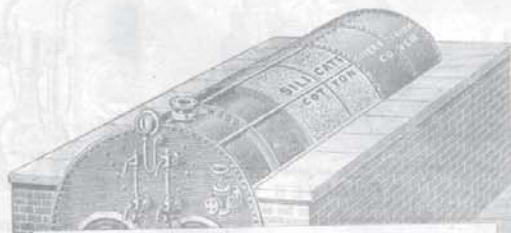
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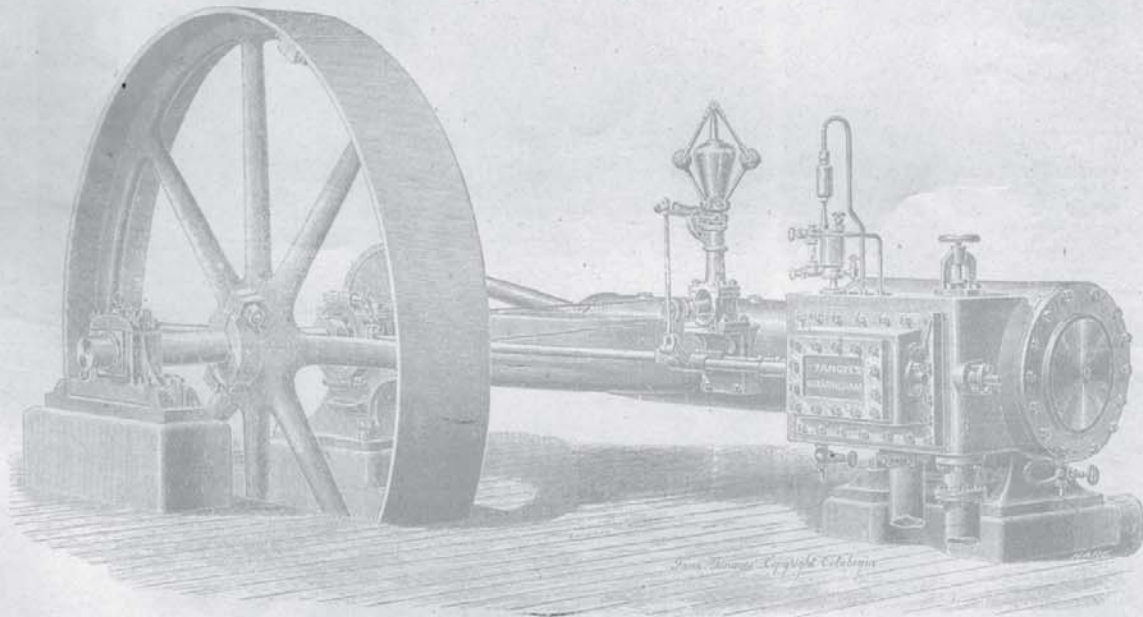
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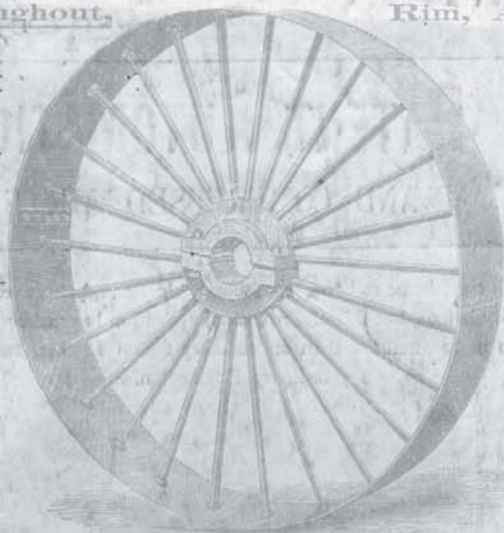
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