Learning and Earning.

A new letter which is at once refreshing and encouraging to read may be found in the current number of the Century Magazine. Briefly, it is an account of the work of Trade Schools as at present established in America, and the communication is inspired by the magnificent endowment of the New York institution with half-a-million dollars by Mr. J. Pierpont Morgan. The schools so greatly favoured have now, after eleven years' growth, nearly 600 students, learning what to do and what to avoid in turning out thoroughly satisfactory work, scientific and practical, in plumbing, plastering, stone-cutting, painting, bricklaying, carpentering, and tailoring. Incidentally we get an insight into the general conditions and trade-union regulation of employment in the United States, and we gather that things are not always what they seem in the land of liberty. Besides the barriers by law established at the ports to prevent the ingress of skilled labour, the industries within are regulated and controlled and engineered by foreigners, who rule the labour market in the interests of their own nationalities. Native Americans have no chance of learning any trade within its own limits, and a mighty slim prospect of occupation if they become proficient outside of it. "The first step towards the rer-ky," it is said, "is the multiplication of trade schools, and the second is the insistence upon the free exercise of every man's right to earn his own living in his own way. It is surely not too much for the American people to say that their own sons shall not only be permitted to learn trades, but shall be permitted also to work at them after they have learned them." Part of this difficulty presses upon us too, and we are even now, in all probability, entering upon a contest for the right of freedom of contract, which may end in— who can tell what? But we have, at least, freedom of entry to occupations, and are not affected by birth qualifications or under alienation as regards supplies of labour. It is pleasing to learn that a start, even though on a small scale, has been made by our American cousins towards furnishing open means of becoming proficient in trades, and we may wish them good luck in their efforts to give free labour franchise to all their sons, lineal and adopted. But we would that some wealthy and public-spirited citizen would so nobly give Belfast an opportunity of equipping young men for filling responsible positions in the world of work. It appears that the New York Trade Schools are sought, and eagerly sought, not only by pupils engaged in workshops during the day, but no less by numbers of young fellows who have finished a school course and are glad to learn trades apart from "humiliating and unpleasant surroundings." There are plenty of such young men about, and too many of them lapse into loafers, or, in their desire to wear a black coat and appear genteel, are wasted as clerks. They are victims of what has been called the vulgar prejudice against work which is itself vulgar. Instead of this, the Trade School makes of them earnest and capable mechanics, ready and competent to fill positions of trust and importance, perhaps able to lead the way in trade improvements—the very men who are often most eagerly sought for and generally hardest to find. Many lots of good promises and promises now leaving school are almost certain to become waste products of society. A Trade School might so develop their inclinations and abilities as to make them valuable and esteemed members of the trade commonwealth, and do a great deal towards giving check to that essentially vulgar idea that there is vulgarity in work.

The Cotton Yarn and Cloth Trade of Ulster.

During the past few years there has been a marked development in the consumption of cotton yarns and cotton fabrics in the North of Ireland. Formerly the bulk of the imports of cotton yarns was taken up in the border territory of linen and linen cambric handkerchiefs, but at present, in addition to this, large quantities are absorbed in the manufacture of union goods of all descriptions. A few years ago, when coarse tow yarns were higher in price than the manufactured article warranted, manufacturers turned their attention to cotton wares as a substitute, with the result that a clean sylkoth cloth was produced at a lower rate than was possible with both linen warp and weft. This new article grew rapidly in favour with the manufacturers of aprons and pinasoles, as well as with exporters, and although some classes of pure linen goods can now be made and sold at the same price as the union goods, the latter article continues to hold its ground, and is taken in preference, owing to its regular and slightly appearance.

Nor is it alone in the coarser textiles that cotton yarns have come into increased consumption, as large quantities are used in the production of shirting fabrics up to twenty hundred (linter count). Large lots of these goods were, and still are, manufactured and imported from Lancashire, but the Irish manufacturer has entered largely and successfully into competition, so that the production of this article also has become an established branch of our local industry. Besides piece goods, a considerable production of union handkerchiefs is carried on, but latterly the manufacture of this article has somewhat fallen off, owing to the changes of fashion and to the extreme cleanliness and beauty of the designs of the printed cotton handkerchiefs made up here. As a rule, purely cotton goods are not manufactured in Ireland, with the exception of some fine mulls, as it is found that the woven fabric can be bought from the Lancashire manufacturer at a lower rate than it is possible to produce it on this side, nevertheless the returns published of the imports of cotton yarns into Ireland during the past few years present a fair idea of the importance of this branch of our industry. For example, the average imports of cotton yarns during the years 1886 to 1890 into Ireland amounted to 2,715 tons, while for 1891 the imports amounted to no less than 3,633 tons, or an increase of over 33 per cent, thus showing a very rapid development.
In addition to the imports of cotton yarn, vast quantities of unbleached cotton cambrics are being regularly brought into this port. These cambric goods are bleached, printed, and made into handkerchiefs on this side, affording employment to thousands of hands. This branch is now an established part of our industry, and to such perfection have our local houses attained, that neither in England nor Scotland can they compete with us in turning out this class of goods. The designs produced in these handkerchiefs are chaste, varied, and beautiful, and when hemmed or hemstitched and finished in the same manner as linen cambric goods the handkerchiefs are marvels of beauty and cheapness. Up till the beginning of this year these goods were shipped in enormous quantities to America, but since the imposition of the McKinley tariff the exports have fallen off in a marked degree, and the trade has been in a rather depressed condition. This is to some extent explained by the fact of the Americans having increased their own manufacture, but a satisfactory or not in the long run remains to be seen. It is remarkable, however, that neither the English nor the Scotch firms can give the linen finish to this class of goods, and they are obliged to send them to this side for that purpose. This of itself gives us hope that the Americans will not have it all their own way, and that our exports across the Atlantic will be short lived.

Besides the American market, which by the way is the chief outlet for this class of goods, a very large trade is done in them with the London and Manchester shipping houses, but the competition has been tiller so keen among our local firms that rates have suffered from cutting. In our next issue we shall enter more particularly into details.

Common-sense Underclothing: A Seasonable Subject.

Following up the remarks in last month’s issue as regards the maintenance, or reservation, or non-conduction of heat, we may turn again to the researches of Count Rumford, for conclusions very different to those generally drawn from them. Let a common error be first corrected, and the idea that any clothing is warm or cold be at once dismissed. There is no actual heat in clothes. As a matter of absolute fact there is no such thing as cold. There is certainly no such thing as a cold material. The thermometer, when placed between linen sheets or pieces of oileth, between woollen blankets or eider-down quilts, will record the same degree of warmth. The reason why there is a difference to the touch is that some materials conduct better than others, and the same variation in apparent cold is found in metals, so that silver feels warmer than gold, and both than lead. Thus our clothes have no warmth, but merely serve the purpose of preventing the loss of bodily heat, or, in the correct phrase, they arrest the radiation of heat, in greater or less degree, as they are slow or quick to give it passage. Wool is a good non-conductor of heat, and thus affords the exception to this rule, but as soon as it is accepted as acceptable to some people. Glass, resins, ivory, and the lighter woods are still better non-conductors; but, as somebody once remarked, with perfect truth, these would form very inconvenient substances to be employed as clothing of wearing apparel. But although it might be thought, from what is at times written about wool, that it had a complete monopoly of keeping mankind warm, all the principal articles of which clothing is manufactured are excellent non-conductors of heat, and there is not much to choose between them. Dr. Krieger filled a sheet-iron cylinder with hot water, and this he covered with different stuffs, noting their effect in impeding the cooling of the water. “In investing the cylinder with a covering of wool, buckskin, silk, cotton, flax (always taking note of the temperature), he found an insignificant difference, not exceeding 1 or 2 in 100.” The experiments of Rumford to determine the relative powers of resistance to the passage of heat in several materials resulted in the following table, showing the amount of heat lost in Sec steads.

<table>
<thead>
<tr>
<th>Material</th>
<th>Heat Lost in Secs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>50</td>
</tr>
<tr>
<td>Raw Silk</td>
<td>38</td>
</tr>
<tr>
<td>Sheep’s wool</td>
<td>94</td>
</tr>
<tr>
<td>Cotton wool</td>
<td>30</td>
</tr>
<tr>
<td>Linen</td>
<td>122</td>
</tr>
<tr>
<td>Flax</td>
<td>231</td>
</tr>
</tbody>
</table>

Total times, 1032.

The difference between wool at 1032 does not seem much to make a fuss about, but when Rumford’s investigation is carried on further the result is still more remarkable.

<table>
<thead>
<tr>
<th>Material</th>
<th>Heat Lost in Secs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep’s wool</td>
<td>60</td>
</tr>
<tr>
<td>Cotton wool</td>
<td>50</td>
</tr>
<tr>
<td>Linen</td>
<td>30</td>
</tr>
<tr>
<td>Flax</td>
<td>20</td>
</tr>
<tr>
<td>Total times</td>
<td>1032</td>
</tr>
</tbody>
</table>

In this latter table may be found the reason why modern woolen wearing is so popular and the air is so easily passed through a mass of air, penetrating from one particle of it to another. There is no fault to be found with the inference that wool is warm as we are enveloped with a layer of air. The double thickness of materials, according to both Krieger and Rumford, gave little increase of heat decay. It is upon the innermost garments, and upon the air in suspension in them, that warmth mainly depends. A fabric to be warm must be open woven. There is a result here which must be taken into consideration, a lesson which must be taken to heart by the Belfast manufacturers, as flax manufacturers elsewhere are changing front. Linen for underwear, as has been argued in this column before, must undergo as great an alteration in structure as that between flannel and the Jaeger fabrics, to regain its old-time popularity among all classes and conditions of men.

It may be thought that this would bring both fabrics into line and leave no substantial separation between them. But, besides the superior durability of flaxen fabrics from the hygroscopic point of view, there are other considerations to be taken into account——the retardation of the air, the slower evaporation, the slowness of the body’s reaction, and the coolness of the air, in the case of cotton and other fabrics, as compared with that of wool. There is a great difference between the feeling of warmth in wool and the feeling of warmth in flax. The sensation is pleasant at first, but is soon lost as the skin becomes accustomed to it. Wool «bastes» its ease upon warmth, and makes, by further indulgence, fussy and fidgety faddists of its adherents. Dr. Combe, although he upholds flannel, lays down a rule which would be far better obeyed by the use of linen. “The rule is, therefore, never to dress in an invariable way in all cases, but to put on clothing in kind and quantity sufficient in the individual case to protect the body efficiently from an abiding sensation of cold, however slight.” The gulf between this sensible stipulation and the garments made in India, so that the use of fresh air should play upon the confirmed woolenite, is a very wide one. “The worst possible error,” declares Pfarrer Kneissl, “is to mistake Warmth for Health, and to imagine you can protect the body from cold by keeping it warm! Warmth is by no means always synonymous with Health. On the contrary, overheated rooms are just as completely unhealthy and weakening to the body as clothing that is inordinately warm.” But woolen clothing is the worst possible thing for the skin; it makes the wearer in the highest degree sensitive and lesseens his power to resist atmospheric influences——does this sound called Safeguard Clothing?

It is here that the important difference in structure between woolen and flaxen fibres comes in, and here that we part from experiments upon glass bulbs and metal cylinders. Unfortunately, except for Rubner’s researches, science has nothing yet to show of the exact effect of underwear upon the human body, but the undisputed
wool is a natural adornment which deserves to be respected. But we do know that wool excites the skin, stimulates it, and, as woolenites maintain, promotes perspiration, although perspiration is a vital process which should be, and is, in perfect health, carried on without encouragement. It is in this respect that wool is warmer in wear than any trial with heat and metals will disclose, and through this morbid susceptibility and enervation of the system. Dr. Mortimer Granville has entered his protest against taking the responsibility for the heat regulation of the body too much out of the hands of nature; but wool-wearers must be, and must keep warm. On the contrary, flax is cooler in wear than any bulb and thermometer would show. It may be cold at first touch, but so is a cold bath. Its round, smooth, and glossy filaments are most refreshing and salutary in wear, a skin tonic which assists but in no sense interferes with the action of the skin, and so tends to the enjoyment of brisk and vigorous health.

For one other consequence of wool-wearing it must be insisted that it causes the decay of cleanliness. The fear of shrinking undoubtedly defers washing-day, and the natural colour of the clothes certainly encourages it. Besides, to cleanse the skin, it is claimed for wool that it removes, by virtue of a natural affinity, the waste products of the body; that the removal of the sebaceous secretions of the body is "a better performed by contact of woolen fibres than by those of linen or cotton;" and this is held to be presumably proved by "the experience of manufacturers of woollen fabrics, who find that soapy and greasy matters adhere so firmly to the fibres of wool."

Upon Pfarrer Kneipp's authority we have accepted a report from a work by F. O. Grunfeld, entitled Das Leinwand, der Kulturgewichte und in Haus halt, to the effect that the hair of wool is "nothing more than a horny tissue which, like horn, bristles, feathers, whalebone, tortoise-shell, claws, hoofs, nails, horns, and scales, covers the exterior of the skin. The most recent investigations have discovered in this tissue a peculiar kind of grease called Lanoline, i.e., wool-fat, which possesses the wonderful characteristics of mixing as well with water as with pure fat. During the process of exhalation, secretions both of the sebaceous glands and of watery vapour collect in these horny tissues in increasing quantities. We see this in an especially prominent degree in the fleece of the sheep, which is composed of these secreted matters, and is in an uncleanly condition, or at least imperious to the small that is in this respect superior by far to the substance." If these secretions are continued upon the person of the wool-wearer, it is at his peril, unless his clothes and his body are not occasionally but continually cleansed. That eminient physiologist Dr. Combe says that—

When the perspiration is brought to the surface of the skin, and confined there either by injudicious clothing or by want of cleanliness, there is much reason to be alarmed at the residue that is thus condensed, as a poison of greater or less power, according to its quantity and degree of concentration, thereby producing fever, inflammation, and even death itself; for it is established by observation that concentrated animal effluvia form a very energetic poison. The fatal consequences which have repeatedly followed the use of a waterproof dress by sportsmen and others, and the heat and uneasy restlessness which speedily cause where proper ventilation is thus prevented, seem explicable on some such principle.

The native feel of wool to be taken into account the well-founded belief that wool-wearers are more liable to contagion than other people, as well as the patent fact that wool becomes offensive to the smell after being worn long. It may easily be believed that Dr. Jaeger's absurd assertions about the attraction of noxious odours by vegetable fibres was nothing more than empty bluff and bluster to distract attention from the far greater affinity of wool for noxious exhalations. That is one of several issues which might be easily and authoritatively tested; another being the allegation by Dr. Hoben, military physician at Berlin, that micro-organisms are more frequently found in woolen than in any other cast-off clothing.

To the serious danger indicated by Dr. Combe, the inevitable feeling of wool through washing, when it is washed, makes it doubly unsafe as a next-to-the-skin fibre.

What is the conclusion of the whole matter? Unquestionably this. That, for body clothing, flax is, in some important respects, equal to wool and inferior to none, while it is, in other relations, of the utmost consequence, far preferable. Scientific conclusions and centuries of personal experience are on the side of linen. Closer and more exhaustive inquiry into the relative properties of textile fibres would, we have no doubt, establish still more emphatically the superiority of flax for next-to-the-skin wearing, and far trial by the people would soon leave flaxen underclothing without a rival. A Strong Supporter.

It would hardly be right to speak of Archbishop Walsh as a recruit in the ranks of the supporters of technical manual, and industrial training as part and parcel of our National System of Education. Dr. Walsh has expressed his views before now, but this definite pronouncement of the subject when addressing the annual meeting of the Society of St. Vincent de Paul, will, we hope, attract that market attention which is its due. His Grace is as high an authority on National Education as anyone in the country. He knows the wants and needs of the Irish people as well as, if not better than, most men. He is the spiritual head of the religion to which the vast majority of the Irish people belongs, and, as such, exercises, no doubt, a greater influence than any layman. The subject of National Education is distinctly within the Archbishop's province, and we gladly welcome him as a supporter of, and as a champion in, the cause of a really useful system of education. Dr. Walsh, in his address to the Society of St. Vincent de Paul, did not shrink from matters or weigh his words in a delicate balance. He declared that, on the occasion of his first visit to the Orphanage some years ago, he had taken the liberty of suggesting that the time had come when it should no longer suffice simply to be "drawn along by that insidious current which, in many respects, has proved mischievous, I must say indeed so disastrous, in its influence upon our system of education in this country.

These are precisely the sentiments we have from time to time expressed; using them, however, not as a warning to one educational institution only, but as a general warning to all. Referring to the "lavish outpouring of public money" which maintains the present system, Dr. Walsh says that this lavishly endowed plan was from the bottom a "gigantic and ruinous misconception." It omitted a provision for the introduction of a useful system of manual instruction—"which would teach the youth of the country to use practically their eyes, their ears, and their hands. No one in Europe or America, at the present day, who is in any way authorised by his knowledge of the subject to give his opinion, would for one moment recognise as truly National any system of education which was based on a purely literary basis. And this to all intents and purposes our present system is. We have before now given every credit to the efforts which the Commissioners have made, and are making, to introduce manual teaching; we by no means intend to retract what have said on former occasions; but it must be recognised that what the Commissioners have done is but a drop in the ocean of what has to be done. What is required is not personal effort such as Dr. Joye's, nor profound sympathy such as Sir Patrick Keenan's, but an entire revision of the system, the rules, and the regulations which govern the National Education of Ireland. The fundamental ideas and theories upon which the present system is based must be replaced by others of a more practical character, and these again must be put into practice in a useful and intelligent manner. Dr. Walsh seems to think that some "not very friendly critics" will denounce him as for having spoken as he did speak, and will take up the false defence of education in Ireland as it really is. There are a great many things in Dr. Walsh's educational programme to which we should hesitate to give in our admission; and there are many on which, no doubt, the "not very friendly critics" disagree with him; but surely there is no one who will attack him for supporting and advocating the revision of the system under which the enormous funds granted from the Imperial Exchequer for education in Ireland are being spent. Dr. Walsh does not, any more than we do, deny the absolute necessity of a National Manual Education, and he seems to ask for a concurrent and equal distribution of access to the system of industrial education. He recognises, as do all advocates of technical instruction, that in the community there are many to whom by their talents, a literary education is absolutely more valuable than any manual, technical, and industrial training. For the National system should provide encouragement and facility for
advancement. No matter how poor or lowly, a student of pronounced and marked ability should have the means of entering upon those higher branches of education which are now closed to him. If, then, Dr. Walsh has endeavored upon a retrograde movement with regard to National Education, we have been moving backwards for years, and we will claim to have been doing so in very good company. We know of no country, claiming to be civilized, in which National Education, State-endowed or voluntary, is in such a backward and misguided condition as it is in Ireland; and that, too, in the face of the fact that poor old Ireland needs a perfect system far more than do most of her neighbours, far or near. We are glad to note that the Archbishop made a strong point in defining what manual training in schools really means. Much of the opposition which its introduction has met with has been caused by a foolish or wilful misconception of its meaning. It does not mean the teaching of trades. It simply means the teaching of the children to be handy—that is, to be able to use their hands at various simple kinds of work. The teaching of trades is a thing quite apart from a system of primary education. It can be taken up with advantage by the State, by corporate bodies, by trade societies, or by individuals, but it is supplemental to and comes after primary education. What we claim is that the teaching of trades and industries will be immensely facilitated by the manual training of children in primary schools; and we claim, further, that even those children who do not, in later youth and early manhood, learn a trade, will be benefited by such training, and will feel its advantages through life.

INDUSTRIAL EDUCATION.

GENERAL BOOTH, in Darkest England and the Way Out, thus writes in regard to the industrial training of children:

"I propose at the earliest opportunity to give the subject of the industrial training of boys a fair trial, and, if successful, follow it on with a similar one for girls."

"I am nearly satisfied in my own mind that the children of the streets, taken at eight years of age, and kept till they are twenty-one, would, by judicious management and the utilisation of their strength and capacity, amply supply all their own wants, and would, I think, be likely to turn out thoroughly good and capable members of the community."

Apart from the mere benevolent aspect of the question, the present system of teaching is, to my mind, unnatural, and shamefully wasteful of the energies of the children. Fully one-half the time that boys and girls are compelled to sit in school is spent to little or no purpose—nay, it is worse than wasted. The minds of the children are only capable of useful application for so many consecutive minutes, and hence the rational method must be to apportion the time of the children; say, half the morning's work to be given to their books, and the other half to some industrial employment; the garden would be most natural and healthy in fair weather, while the workshop should befallen upon when unfavorable.

"By this method health would be promoted, school would be loved, the cost of education would be cheapened, and the natural bent of the child's capacities would be discovered and could be cultivated. Instead of coming out of school, or going away from apprenticeship, with the most precious part of life for ever unemancipated; or that used to some pursuit for which there is no predestination, and which promises nothing higher than mediocrity, if not failure—the work for which the mind was peculiarly adapted, and for which, therefore, it would have a natural capacity, would not only have been discovered, but the bent of the inclination cultivated, and the life's work chosen accordingly."

Practical Notes on Textiles: Linen Bleaching.

II.

Historical.

DURING the middle of the last century a great amount of interest and attention was directed to Egyptian relies; considerable discussion arose among learned antiquaries in connection with the nature of the fibres from which the mummy cloths were manufactured. It was questioned whether the "fine linen" for which the Egyptians possessed a historic reputation was not in reality the same as the flax fibre, or the Gossypium herbaceum, or cotton fibre, rather than the Linum usitatissimum. Up to the year 1750 it was asserted and maintained by almost all our pundits that the fine linen samples, or mummy cloths, were made from cotton; and such was the influence that writers upon the subject had in forming public opinion, that the question was regarded as settled once and for all time, and this opinion was retained, despite all proof to the contrary, for more than half-a-century. In the early part of the present century, Mr. Thomson, F.R.S., of Clitheroe, Lancashire, obtained specimens of the cloths from various sources, which he found in every case to be produced from the flax fibre, because the threads were round and smooth, whereas the threads of a cotton fabric he found to be angular and sharp; this was confirmed by numerous experiments, chemical and microscopic. Thus was set at rest for ever the vexed question of the essential origin of the "fine linen" of Egypt. In Baine's History of the Cotton Manufacture there are some beautiful drawings, copied from the originals, made by Mr. Bauer, of flax and cotton fibres under the microscope. These illustrations show the flax fibre a perfect round tube, smooth and jointed; these features are regularity at the rate of from 700 to 800 per inch, the finest fibres containing the greatest number. Of course it is necessary, in following out these experiments, to make use of a microscope with a power of 400 as a magnifier. Now, it would appear that the flax plant has been cultivated and converted into fabrics for the use of mankind from a time beyond historic record—probably, for anything we know to the contrary, before the building of the Tower of Babel or the Pyramids.

Hygienic Estimate of Linen by Ancient Egypt.

Considering the myriads of human beings who have passed away in the land of Egypt alone, taking no account of other countries which more or less made use of underlinen, it would be monstrous, if not imbecility on our part, to say they were mistaken in wearing such apparel because of its unhealthy, insanitary action; yet this is actually what in substance is preached by latter-day zealots (in a new sanaotorial gospel crusade) who have just come on the scene, after thousands of years have passed over, to prove that it was all wrong. As a matter of necessity, convenience, luxury, and health, linen will be worn by those who know its value as undergarment just as it was in Ancient Egypt. It has been repeatedly asserted that pure manufactured linen is, under ordinary circumstances, indestructible; the proof is given in the mummy cloths; and further, in testing under every conceivable operation incidental to wear and tear, no fibre can be found so suitable for the production of bank notes as that derived from flax. This may be considered the proof unit voce.

The Bleaching of Linen.

There are some removable causes militating against a proper expansion of the linen industry. Perhaps it is not too much to say that the general consumer is mainly to blame for an inferior article. The demand for a snow-white bleach is one cause which, no doubt, is facilitated by merchants and retailers encouraging this very much mistaken notion that a snow-white bleach must be the perfection of a linen piece. There is no thought or reason brought to bear upon the mind that a bleach of this nature cannot be obtained except at the expense of weakening the fabric. The same thing, for example, will be found in other articles; ginger loses its strength in bleaching, and the snowy whiteness of sugar is obtained by the loss of its saccharine qualities. The pure snow-white of a grass bleach is beyond our reach except by artificial means, which are risky in their action; and we have known linen manufacturers refuse orders where the conditions demanded a snowy whiteness; they have declared it would imperil the character of their productions. Yet these men have survived the loss, and have regular repeat orders both from home and abroad, and their goods will sell in the same articles of trade as parchment. The fact is, the linen trade has suffered immensely by yielding to the cry for snow-white cloth to satisfy fastidious custom; while, at the same time, housekeepers constantly speak of the durability of linen as much inferior to that made in the days of their grandparents.

Laundring of Linen.

Again, perhaps worse than all is the usage which linen textiles of every description receive in many laundries, the worst treatment being meted out to table napkins and table-cloths, showing years of wear, although only a few months, or in some cases weeks, from the manufacturers, who are of course blamed on all sides for the weakness of their goods. An examination of some napery which had been tortured in the wash showed heavy incrustations of a substance subsequently found to be carbonate of lime; the fabric gave about 8 per cent. ashes, mostly composed of calcium carbonate. This shows that the actual deposit of such a large quantity of an inorganic substance, spread between and over the fibres, must exercise a very pernicious
effect on the strength and durability of a fabric; the presence of this mineral substance acts as a grinding material, wearing out the warp and weft fibres in the handling as well as in the washing. It is, we are sorry to say, quite a common practice in large hotels, restaurants, etc., to damp linen with lime water, and to put the clothes through in place of washing; slightly used table-cloths and napkins are thus restored to a clean appearance without further labour. But this results in both injury and loss. The crystals formed between the fibres expand, owing to the lime water becoming transformed into caustic lime in the fabric; the hydrate of lime, through its contact with atmospheric air, becomes a carbonate, so augmenting its volume, which again works detrimentally on the fibre by tearing it asunder, the carbonate of calcium thus formed acting like the teeth of a saw. In fact, quite independent of the corroding action of lime water, there is the added evil of a direct mechanical action that no amount of strength in the fabric can withstand. This vicious practice ought to be stamped out if people care to preserve the durable properties of their choice linens. But if the treatment linen receives at home laundries is bad, the French system is worse, Parisian blanchisseuses having a bad reputation in this respect. As for India, Irish linen suffers tremendously from this cause, the native washerman utterly ruining the fabric in the course of two or three experiments. This is a grievous drawback to the consumption of linens, especially for underwear and bed use, in a country where it is such a luxury.

Yarn Boiling and Bleaching.

No doubt our linen manufacturers are only too willing to make thoroughly sound and serviceable goods if supported by the public, but with the continued call for an absolute white it is extremely difficult to deal with the question. One of the greatest drawbacks to bleaching is to be found in the yarn boiling. When the ordinary caustic soda ash, rendered caustic by the addition of lime, is used, it is in its action a potent cause of injuring and depriving the yarn of its nature; the remaining vegetable matter becomes a fixed quantity which the after process of bleaching cannot eliminate; thus the fibre becomes weakened, and the further evil of extra sizing to restore the strength for weaving purposes, intensifies the mischief when produced as a fabric. The use of carbonated soda, on the contrary, preserves the best value in the yarns—better for weaving, as well as for the bleacher, who is enabled to produce a superior white bleach with a sounder fabric. It is well known that the bleach from caustic soda is a sulphurous white, not really what it seems; it no doubt may look well for present uses, but the good looks are obtained at the expense of one of the most valuable properties of the fibre, its lubricating power. The yarn is put into water, worked sharp in extra strength of caustic soda, without any motion, is only mere steeping, or as it is called "sweetening," and the real point for success is, and they are neglected, and that is, thorough good washing. With only a very little care there need be no broken yarn, or, at the most, a very small percentage compared to many operations. Let the carbonate of soda, along with the addition of barilla, settle well in the pans, and it will be found that the product is a good, round, smooth, strong thread that cannot be converted into hairy linen cloth. Chemical agents employed act differently at various strengths and temperatures. The successive processes of immersion in a solution of chlorine may be easily overdone at one or both stages in a process to the injury of the goods. When the pressure method of bleaching was first introduced, it was said it was "rotted out the goods and killed the workmen." Some of these chemical agents are, like fire and water, good servants when used, and with knowledge, but most destructive if not controlled. It may be taken as a general rule that, as the strength of a solution is increased, the yarns and fabrics immersed in such solutions become in inverse ratio diminished in power of resistance or strength.

Technical Knowledge.

The real truth is, head, hand, and heart must all combine in the production of articles used in everyday life. This fact is becoming gradually realised, foreign competition, with hostile tariffs, is increasing, and the necessity of altering our conditions of manufacturing is as clear as noon-day. The old twaddle of giving away trade secrets is at an end, and there is only one possible way to contend with foreign rivals, and that is by the aid of technical inventions to improve our industrial skill. No other course is open, and every endeavour towards this object ought to receive unstinted encouragement. Such institutions, in the midst of industrial centres, foster the latent and inventive powers of our operatives; in short, are the alma mater of a manufacturing district.

The Lancashire and Scotch Cotton Industry.

In the report of the Inspector of Factories, just published, Mr. Henderson, Superintending Inspector for Scotland and the North of England, thus writes as regards the condition of the cotton manufacture in Lancashire, and supplies some interesting notes respecting the cost of production in both places. Speaking of the Lancashire district, he says: "There has been a growing tendency on the part of private capitalists to withdraw from the business, and I referred to this last year in some remarks I made with respect to the Blackburn district, and they are applicable to a much wider area. It is distressing to witness the havoc which has been made in some of the principal linen towns, and the old modern emulations and competition. Factories and cottages closed and unmanned; the threads are to be found, and to attest the waste, one house, and to meet the visitor almost at every turn, and they give some indication of the great sacrifice of capital which must have been made before the present hopeless condition of things has been reached.

The time has passed when we can trust to the machinery itself promises soon to become extinct, and we shall then be reduced to the position which obtains in the manufacturing districts of the United States. The only employers of labour will be the limited companies and corporations. That this revolution is likely to prove beneficial to the operatives is not denied; it would do well to weigh the point carefully. The cotton industry has been prosecuted in this country during the last 50 years with great success; it has expanded during that time more rapidly than the most sanguine ever anticipated. The tendency at the same time has been to send the smaller capitalists to the wall and to increase individualisation; it is more and more difficult to compete with large companies owning enormous factories and equipped with the most modern machinery and appliances. Another influence which has operated much in the same direction is the increasing demands upon manufacturers by the Legislature, and the growing difficulties and disabilities of small producers. It is a question that can be no question about the facts that late many employers havewithdrawn from the cotton industry at a serious sacrifice, rather than face the increasing worries and annoyances which they find themselves compelled to face. Upon the paid official of a public company these fall lightly comparatively speaking, and the companies, or 'co-operatives,' as they are generally termed, promise to have the trade much to themselves by-and-by. At the present time, of the many new cotton factories being built or projected in my district I cannot recall one of any importance which is owned by a private employer.

Lancashire Weavers work Four Looms.

"An interesting fact has recently come to my knowledge which bears upon what I said in my last report to you about the competition between Lancashire and Scotland in the cotton manufacture. Between the time the remarks I made were written and your report was published, the Glasgow Textile Council was approached by a deputation from the weavers of one of the cotton towns in Lancashire, and it was reported that they were being most unreasonably dealt with, being paid low wages and also called upon to work three power-looms each instead of two. The assistance of the Trades Council was claimed, as a strike was contemplated. Before taking action the Council determined on making some inquiry and a representative was sent to Lancashire, who discovered that the numbers of the weavers, both men and women, worked four looms at the same class of work without difficulty; nay more, it also came out, as result of this inquiry, that the Scotch manufacturer actually paid more for his weaving than his Lancashire competition and yet his weavers could not make half the wages of those in that county. We need go no further than this for an explanation of the reason why the Scotch manufacturer fails to resist Lancashire competition. He pays a high rate for weaving his cloth and his machinery produces less, because his workpeople will not alter their accustomed habit of working only two looms.

American Tariff and a new Linen Loom.

"Much interest has been felt among both manufacturers and their workpeople during the past year as to the probable effect upon British trade of the new American tariff. My impression is that it is still too soon to draw any conclusions; so far I have the impression that we have found that manufacturers on this side apprehend that it will do them serious injury. It has in some cases done a good deal of mischief by deranging trade, and by causing producers to spend more money in adapting their machinery to the new conditions. In this respect it has operated as a stimulus to the older firms to construct new and elaborate machinery being constructed in a machine shop near Manchester, which is intended to weave fine linen damasks in a manner which will bring them outside the pale of the new tariff; this may possibly lead to the introduction of what is practically a new fabric not only into the market of the United States, but into the markets of the whole world. Such of our manufacturers, both of cottons and woollens, with whom I have conversed,
The Belfast Linen Trade Report.

Drawn up by the Linen Trade Board, appointed under the sanction of the Belfast Chamber of Commerce.

IT can scarcely be said that there is any change for the better in trade, which is still very quiet in the home department as well as on the Continent. It is, however, satisfactory to find that the falling off in the general shipping trade is more than counterbalanced by the volume of business done with the United States and Canadian markets, as appears by the Board of Trade returns for the past month.

FLAX.

Continued firmness in price marks the course of the raw material, and both home and foreign supplies are held for full rates, the tendency being still in favour of holders. Pending the opening of new season, sales have been small of late.

The following reports regarding the Irish crop were received from our correspondents within the past few days:—

BALLINAB—Flax pulling has commenced in this district, but the crop will not be an average one. BALLYMENA—Pulling has also commenced here, and will be general in a week or two. Crop appears to be short and light.

CORKERAIN—In a few days pulling will be general in this locality. Weather for some time past has been most favourable for ripening the crop, so that strength and quality of fibre may be expected if harvesting is completed under favourable circumstances. The straw is reported to be looking better than was anticipated.

COOTEHILL—Owing to the late dry weather flax has improved very much; pulling has commenced, and it is expected there will be a fair average crop. COMBER—Flax crop looking fairly well; pulling just started. LIMAVADY—Pulling also going on in this district; crop is thin, and will be much smaller than last season's.

MONAGHAN—Pulling general, and a considerable quantity in the water already. Flax very variable; some fields good, but a large proportion under the average bulk.

YARNS.

A very fair and steady demand has been kept up for both line and tow yarns since last report, and spinners are still to some extent under contract, so that they are careless about larger commitments, in the face of a probably higher level of prices for flax.

The export demand has been considerable of late, the shipments for July for the United Kingdom being upwards of 30 per cent. more than the same month last year. Foreign spinners are reported to be well supplied with orders, and prices generally well maintained. In our market the quotations of last month have been firmly adhered to in regard to all yarns, with the exception of a few numbers of tow wefts, which are fractionally cheaper, as noted below.

BROWN POWER AND HAND-LOOM LINENS.

Though a fair amount of business is doing in light power-loom bleaching cloth, the prices obtained are very poor and unremunerative. Medium and heavy grades, of which there is much smaller production, are in moderate demand, but without any improvement in prices. Ballymena linens are rather dull, but the present production is about taken off, though prices are not any better. Rather more doing in County Down at firm prices, and supplies on the market are very small. Cloth for dressing quiet, and rates without change. In dress linens only a trilling business doing, the season being over so far as home demand is concerned. Roughs of best quality move off pretty well, but for common grades demand is slow, and stocks somewhat larger. Drills are also very quiet, but glass-cloth, crush, canvas, and some other makes of coarse linens are in tolerably good demand, chiefly for shipping account. The handkerchief trade can scarcely be said to be any better; both linen and cambric, whether power or handloom, are still slowly moving, and prices are bad. For power-loom diapers and damasks there is a fairly good demand, but hand-loom goods are not at all brisk.

BLEACHED AND FINISHED LINENS.

Home Trade.—The past month has been an extremely quiet one, so far as relates to this branch of trade, the business doing being of a merely sorting-up nature. The continued depression in other textile industries—cotton, wool and silk—is also felt in the linen centres, though probably not to the same extent.

Continental.—With the exception of a trifling increase from Germany, amounting to 3 per cent. as disclosed by the Board of Trade returns for July, all other countries show a considerable falling off; the previous extra large shipments to Spain having given place to a great reduction for the past month.

United States.—As a set-off against the decline in the shipping trade with other countries, the quantity of goods exported to the States appears to be still on the increase, the aggregate of piece linens being upwards of 26 per cent. more than for July, 1891.

Other Markets.—British North America figures as a much larger customer than in same month last year, the increase being over 40 per cent. A proportion would doubtless be to replace stocks destroyed in the great fire at St. John's, West Indian, South American, and all other markets show a diminished consumption for the month.

For the seven months ended July 31, the total quantity of linen piece goods exported from the United Kingdom shows only a fractional increase of less than 1 per cent., which contrasts unfavourably with the position to the end of June.

EXPORTS OF BRITISH AND IRISH PRODUCE AND MANUFACTURES.

<table>
<thead>
<tr>
<th>Seven Months ended 31st July.</th>
<th>1891</th>
<th>1892</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animals, living</td>
<td>£337,592</td>
<td>£354,491</td>
</tr>
<tr>
<td>Articles of food and drink</td>
<td>5,663,794</td>
<td>5,386,638</td>
</tr>
<tr>
<td>Raw Materials</td>
<td>12,508,355</td>
<td>10,763,080</td>
</tr>
<tr>
<td>Articles manufactured and partly manufactured, viz.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. Yarns and Textile Fabrics</td>
<td>62,017,816</td>
<td>58,419,453</td>
</tr>
<tr>
<td>b. Metals and Articles Manufactured therefrom (except Machinery)</td>
<td>24,685,843</td>
<td>19,326,064</td>
</tr>
<tr>
<td>c. Machinery and Mill Works</td>
<td>9,425,007</td>
<td>8,950,947</td>
</tr>
<tr>
<td>d. Apparel and Articles of Personal Use</td>
<td>6,389,319</td>
<td>6,183,390</td>
</tr>
<tr>
<td>e. Chemicals, and Chemical and Medical Preparations</td>
<td>5,284,859</td>
<td>4,891,336</td>
</tr>
<tr>
<td>f. All other Articles, either Manufactured or partly Manufactured</td>
<td>19,094,019</td>
<td>16,549,369</td>
</tr>
<tr>
<td>o. Parcel Post</td>
<td>600,477</td>
<td>587,872</td>
</tr>
<tr>
<td>Total Value</td>
<td>£146,011,364</td>
<td>£131,324,590</td>
</tr>
</tbody>
</table>

Prices Current for ordinary Line and Tow Wefts. August 13th, 1892.

| LEA NO. | 14 | 16 | 18 | 20 | 22 | 25 | 28 | 30 | 32 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 100 | 110 | 120 | 130 | 140 | 150 | 160 |
|--------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

These prices are per bundle of 60,000 yards of grey Yarn, subject to the usual discount for cash.

120 threads 25 yds. = 1 lea
12 leas = 1 bank
16 banks = 6 cwt = 1 bundle

The subject of the American tariff, say that its influence so far has been chiefly to compel them to go in for the production of a finer and more expensive class of goods. They treat the prognostications of the American press about the destruction of their American trade lightly, as they are satisfied that this with class of writers is the wish father to the thought. In this country we possess an important advantage as manufacturers of textile fabrics in our climate, and, although we are ever ready to abuse it, it is a lucky thing for us that no foreign tariff can deprive us of that. An Oldham millowner could live comfortably on the extra waste made in Fall River spinning mill, and the finer the quality of the material, the greater the difficulties which have to be encountered in its production on the other side of the Atlantic."
### Exports of Linen Yarns and Linens from the United Kingdom for the Month ended 31st July, 1892; and in the Seven Months ended 31st July, 1892, compared with the corresponding periods of the Years 1890 and 1891.

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>MONTH ENDED 31st JULY</th>
<th>SEVEN MONTHS ENDED 31st JULY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1890</td>
<td>1891</td>
</tr>
<tr>
<td>Linen Yarn.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To Germany.</td>
<td>264,000</td>
<td>224,800</td>
</tr>
<tr>
<td>Holland.</td>
<td>207,300</td>
<td>216,100</td>
</tr>
<tr>
<td>Belgium.</td>
<td>170,200</td>
<td>111,500</td>
</tr>
<tr>
<td>France.</td>
<td>111,300</td>
<td>115,100</td>
</tr>
<tr>
<td>Spain and Canaries.</td>
<td>322,000</td>
<td>335,700</td>
</tr>
<tr>
<td>Italy.</td>
<td>323,000</td>
<td>20,700</td>
</tr>
<tr>
<td>United States.</td>
<td>56,000</td>
<td>85,600</td>
</tr>
<tr>
<td>Other Countries.</td>
<td>105,000</td>
<td>120,600</td>
</tr>
<tr>
<td>Total.</td>
<td>1,310,400</td>
<td>1,170,600</td>
</tr>
</tbody>
</table>

### Imports of Flax—Dressed, Undressed, and Tou or Codilla:

<table>
<thead>
<tr>
<th>COUNTRIES</th>
<th>MONTH ENDED 31st JULY</th>
<th>SEVEN MONTHS ENDED 31st JULY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1890</td>
<td>1891</td>
</tr>
<tr>
<td>From Russia.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany.</td>
<td>127,050</td>
<td>132,868</td>
</tr>
<tr>
<td>Holland.</td>
<td>2,182</td>
<td>4,770</td>
</tr>
<tr>
<td>Belgium.</td>
<td>1,945</td>
<td>5,711</td>
</tr>
<tr>
<td>Other Countries.</td>
<td>3,644</td>
<td>2,109</td>
</tr>
<tr>
<td>Total.</td>
<td>150,607</td>
<td>161,867</td>
</tr>
</tbody>
</table>
Monthly Reports.

(From our own Correspondents.)

Irish.

Dublin.—In the woollen centres trade shows some slight improvement, the general tone being somewhat better, but business is duller and the city firm in regard to price, but yarns show no sign of any material change. In prices business is fairly steady, worsted coverings and linings being in demand. The market for linen shows no apparent change, the inquiry being still moderate at previous prices, which are being maintained. The woollens will be produced in the Woollen Department at the Exhibition, and not only will they be labelled with a full description of the source of their origin, but orders will be booked for similar articles. So far this is entirely satisfactory, but I want to call attention to what Cardinal Gibbons is reported to have said on the subject. His Eminence stated that "if you want to see the production of Irish linen..." He then went on to say that a great many orders are likely to come from Ireland to the American clergy. This is directly confirming the position I have always taken up. Provided the goods are equal to and as cheap as others, Ireland will get orders; in other words, she must be able to compete without fear or favour if she desires to take her place in the market. A large number of Irish manufacturers are willing to sell their goods from Ireland, provided they cost no more and are as good as those they have hitherto got from Germany, and Germany stand on the same footing as regards tariffs, that there should be no difficulty in the way of securing this outlet for some of our manufacturers.

Technical Education.

Lord Methick has been moving in the matter of technical education for the people of Bray and the neighborhood of that township. A provisional committee has been nominated for this purpose, with power to add to their number, and with instructions to communicate with the local authorities and individuals, and to form a union of all the schools, for the purpose of carrying out the idea. A programme has been established for the establishment of classes for—1. cooking (cottage, plain, and high class); 2. laundry work; 3. scientific dress cutting and making; 4. modelling; 5. drawing; 6. manual instruction; 7. horticulture. It is also in contemplation to hold classes for the better preparation of teachers in some of these subjects. Further, the initiators of the movement resolved to "invite persons interested in the subject in Enniskillen, Dalfay, Killinney, Greystone, and Kingstown to assist in carrying out the above programme into operation during the ensuing winter, and to issue a circular asking the people of Bray to subscribe, so as to carry out the proposed programme." This is the second of the townships round Dublin which has moved in this matter. In the Pembroke township Lord Pembroke's munificent gift forced, so to speak, the hands of the authorities and compelled them to action. Bray has had to move of its own accord, and has done so to some purpose.

Irish Lace.

I have not much to say on this subject. Next month I hope to be in a position to report favourably on the advance in work and design of Irish lace during the past year. By that time the annual exhibition of these fabrics will have taken place at the Horse Show. We shall have had the opinions of the official judges, and we shall know the prize-winners. From what I hear, all the old schools will well maintain their reputation, and some new competitors for favour will be in the field. Meanwhile, amongst her other labours Lady Aberdeen has been endeavouring to open up a wider American market for these delicate fabrics. She has made arrangements by which a number of houses in America are willing to act as depots for the sale of Irish lace, and this, no doubt, will open up what has hitherto been the best market for them. The Irish Industries Association, too, is putting through, I understand, larger quantities, so that work samples for all. But whilst engaged in the production of lace, with lots of room for many more capable and busy hands.

The Industrial League.

I had an interesting interview with Mr. Thomas Elliott, of Weavers' Square, the leading man was naturally anxious about the Industrial Exhibition, but naturally turned a good deal on silks and poplins, which are his special manufactures. As to the League, Mr. Elliott is firmly convinced that the calling upon Dublin traders by deputations is doing good. He holds, and he ought to be able to form a fair judgment, that many of the shops should have a larger share in distributing foreign goods. They have, from one cause or another, drifted into this position, and without some special effort they will not get out of it. Mr. Elliott is prepared with examples to prove his case, and without mentioning any names he told me of one instance where, though he had been declining for some time, he was suddenly and unexpectedly favoured with an order for exactly the same article. He is also, by the way, a firm advocate for demanding Irish goods from the shopkeepers. Mr. Elliott is far too shrewd a business man to expect the public either to take what they do not want or what they could not possibly want to throw away in order to buy cheap, so because it happens to throw itself in his way, he holds that they should make an effort to obtain what they want of Irish manufacture, and not take the first article offered without endeavouring to find as good value in home products. With this view none can quarrel, the only doubt being, will the public take the trouble to ask for Irish articles? Mr. Elliott has a large store in the Irish market, which, he says, is practically shut to these manufactures. He also had a good deal to say about the treatment of Irish silk weavers over the decoration of the Mansion House Ballroom. But this latter is ancient history now, and there can be no more in reopening the matter. The result was bad, and may not be bad, but he holds not in a position to pay the price of a first-class thing, the purchase is out of the question. A man with only £1 in his pocket cannot buy a £4 suit of Irish tweeds. He wants a suit of clothes, and has to do the best he can with the money at his disposal. This fact must be well understood by all the manufacturers, for the market they cannot sell in this country, and not in a position to suit the purchaser, I hope that some effort will be made by the general public to patronise them.

Lurgan.—The linen cambric handkerchief trade is still very dull; the past month, however, is always about one of the dullest in the year. It is in a most unfavorable prospective, and the re-extension of the hand-loom bounties will bring increased business and life into all departments. A good deal of cambric for hemstitching has been made lately, but the production of hand-loom goods all round is down to the lowest point yet reached. Hand-loom linen handkerchiefs (of boiled yarns) are about as slow as can be. No new manufacturers keep still busy, but new demand has reduced the number of factories which were engaged making nothing but linen cambric are turning unto linen goods. The output from hand-looms is now extremely small, owing to hay harvest and scarcity of employment. Bird-eye diapers, damasks, and cambrics are in increased demand, and some bird-eye work is starting to the former. Machine hemstitchers are not quite as busy as they would wish to be.

English.

Barnsley.—The linen trade of this district has during the past month been fairly steady, with the exception of the dulness in the lower classes of goods, but the demand is at their looms fully employed. In table linens there has been a much better feeling recently, the demand having improved slightly. New designs which are being put upon the markets are meeting with more favour than for some time past, and for the home trade the demand seems likely to be fairly good. In cretonne, satin, and similar coverings, the demand has usually equalled to production, and for export account much more than an average business is taking place. In plain, fancy, and bordered towels a good number of orders have been booked, and especially in the finer qualities of goods this has been the case. Roller towelling have had an inquiry for goods with some variety. Domestic cleaning and government keeping selling as they are produced, without much stock remaining on hand. Taken as a whole, the prices of various classes of goods are fair, although complaints from manufacturers are freely expressed that competition, both amongst themselves and from abroad, is very keen, and the demand is not much but slight hope of much improvement is expected in the future.

Leeds.—Business generally in this district has been fairly active, and, with slight exceptions, manufacturers of the various classes of goods keep fully employed, whilst in the Guiseley and Yeadon districts many mills are working overtime—a few day and night—producing the more kind of mantlings and such-like goods adapted for ladies' wear. The higher classes of worsteds are still meeting with favour, whilst in other descriptions a moderate business has been done. Serges have a
good demand, and are being produced in large quantities in both plain and fancy styles, the latter meeting with most favour. Tweeds, cheviots, and such-like cloths have sold fairly well in the lower and medium classes, and for the finer kinds in good design and colouring the demand has improved. Goods specially made for the ready-made clothing trade have sold rather better recently, but the pressure of goods in other trades has had a great effect upon this branch of the woolen trade; still, hopes are entertained that a better demand will arise shortly, as the inquiries for new contracts have recently been rather numerous, and already much stock has been cleared off.

BRADFORD.—In wools, as regards both demand and prices, there is little to report this week. The consumption of the raw material is in the usual staple bus; it is only by hand-to-mouth character; and as two large firms have had during the month had meetings of their creditors, a rather uneasy feeling was prevalent for a few days, but this did not affect prices in a perceptible degree, as these have, on the whole, kept fairly firm during the year. The country orders for the year next year are not so large as last year, and the wools they have to sell, and this fact makes the stapler in turn hold his wood firmly. In regard to the yarn trade, a rather quieter feeling has prevailed, and where merchants have offered orders, they have generally tried to get some concession in prices, but, as a rule, with little success. The price offered in the local markets is now well down, and orders of work, orders of this class have been refused. In the Botany branches, business has been slightly better than for some time past, but the orders are generally small and at low rates. The piece trade has a quieter aspect in nearly all branches, and orders are with difficulty secured, even at lower rates.

MANCHESTER.—Since my last report was published, the home trade has not been marked by any features which can be regarded as indicative of substantial improvement. The large dividend (8% per cent.) paid by Messrs. Rylands & Sons, Limited, points to the existence of a prosperity which has not, from all accounts, been generally shared by the rest of the staple. Continental orders have been rather better, but on the whole conditions for safety are by no means encouraging. There is certainly a good deal of complaining to be heard, and, after allowing for the usual amount of exaggeration of which some people are guilty in relating their woes, it may be taken for granted that there is some truth in what is said that agents have been found to work it, and the Kiel orders, especially, have proved late to please themselves and their principals. The ordinary requirements, of course, have had to be met, and a fairly steady demand has prevailed even where grumblers have grumbled their loudest. But there has not been anything like robust activity in the market, and it is this, coupled with adverse reports concerning other trades, that has depressed the linen man.

The Cotton Trade Crisis. The contemplated action of the United Cotton Spinners' Association has also had an injurious effect. The final decision of the masters may possibly be known by the time these lines are in print. All through the writing, however, the Association is endeavouring to test more thoroughly the feeling of the trade as to the proposed ten per cent. reduction of wages and running of short time. Many firms who do not belong to the spinners' organisation would be willing to co-operate with it. It would be natural for a good many manufacturers to see in the interests of Lancashire and Cheshire employers in raising the important question now before the trade. Briefly, however, it may be stated that, while competition has been increasing, consequent upon the erection of new mills at home and the partial closing of the great Eastern market, and while prices are falling, employment, earnings, and wages have not been raised in proportion. The cotton operatives have had to make no sacrifices, although their employers have for years found the struggle for commercial existence increasingly difficult. To-day the former rank as the most highly paid class of textile workers in Europe. The women and girls in Lancashire are outside money than men weavers in the silk trade, where the average wages (I am speaking of Macclesfield) have not for some time exceeded 10s. to 11s. per week. I know cases where young women of 20 or 21 in a silk mill do not make 7s. a week, while in the weaving cotton factories, men earn twice as much. A lad, even in Lancashire make as much money as a Macclesfield silk weaver who has been at the trade all his life. The earnings of some families in such towns as Burnley, Nelson, or Oldham exceed those of many a professional man; and it is a very common thing in some parts of Lancashire for a master to own three houses like those they live in others besides. I have a case in mind where a mill hand is the possessor of a whole street of houses. In addition to the advantages thus enjoyed, the textile workers of the country have the benefit of food which is much cheaper than that which their fathers had to buy in the old days of lower wages. The average wages of the worst-off in the cotton trade—men and women, in the mills, wages is not far below their father’s position; their leaders are men of ability, with as much knowledge of the trade as the employers and their press organs are numerous and influential. The masters now think that it is time their operatives made a large sacrifice for the good of the trade; and I venture to prophesy that the question raised during the autumn will be referred to again in the spring, possibly of some kind. If the men, confident in their own strength and the sagacity of their leaders, insist on striking rather than accept the proposals of the masters, the outcome will in any case be a reduction of the union funds—possibly an entire shrinkage away of them. But it is not yet certain what course the masters will take, although there is a growing feeling in the trade that wages are too high, in view of the unremunerative character of the industry. Had it not been for the adoption of the limited liability principle in Oldham, the spinning trade would not be able to maintain the position it occupies to-day.

The silk trade is passing through a crisis of a serious character. It may be true that Macclesfield was so depressed, and hundreds of weavers are walking the streets. Leek is a little better off, owing to the special character of the trade there.

The wool trade is in a deplorable condition, of which the "passing of Lester" is but a prelude. There is a slight improvement in some branches of the Yorkshite trade, but the general condition affairs is not satisfactory. All this adversely affects warehousing and accounts for the want of elasticity in the home demand for linen referred to above.

LONDON.—We are just now passing through the usual quiet season, which may be said to commence about the middle of July and runs on until September. Trade is at that time fairly quiet, so far as city and suburban business is concerned; but a great briskness is shown throughout the provincial centres than was anticipated. Travellers report that the country is in a good state most of the agricultural districts, but would be improved by a few days' soft rain, the September-August weather, as well as the. fall. Every class of customers, wholesale and retail, in these districts, have been busily engaged and purchases have suffered sufficiently. Five lines of credit which one takes up declines that the indebtedness is to a great extent abroad, and before the present year terminates, it is to be feared that shall have a greater number of stoppages than was expected. In the midst of so much of a large scale of settlement it is remarkable the export trade of the great firm of Rylands & Sons, Limited, which shows a surplus of £25,000 4s. id. for the half-year ending 30th June, 1892, and out of this it is proposed to declare a dividend at the rate of 8 per cent. per annum, free of income tax. This will be £22,250 4s. 4d. in all, and the company will then have £457,964 8s. 6d., figures rapidly approaching a reserve of half-a-million.

The surplus of £25,000 4s. id. already referred to is not beaten by a dry goods company in the world, though the H. B. Claphin Co. of New York comes perhaps next. Taking all the concerns of the Messrs. Rylands & Sons, Limited, we have over 11,000 employees. The export trade has been better than this year, and the importation of the dry goods trade, is the largest number of goods employed by a single company in this country. Messrs. John Howell & Co., Limited, have declared a dividend at the rate of 10 per cent. per annum, free of income tax, on their shares, which have been declared to be 18s. a share. The incorporation in 1871. In the export trade business still remains active as quiet as it can be. An advice which reached London a few days ago from Melbourne, states that the banks, owing to the insecurity which followed the recent financial disaster, were closely restricting advances, and many have become somewhat strained. The depression is described as being very severe, and trade has been growing worse throughout June. In the drapery trade, in particular, goods were being sold without reference to cost, by manufacturers, in a way which was significant of a necessity to realise money and to work off the goods which had been produced. The depression being very severe, and trade has been growing worse throughout June. In the drapery trade, in particular, goods were being sold without reference to cost, by manufacturers, in a way which was significant of a necessity to realise money and to work off the goods which had been produced.

The news, however, that a loan of £2,000,000 was being negotiated the London market for the Australian colonies has somewhat brightened the commercial horizon; still, the outlook for the Australian export trade is gloomy. From Queensland the report has reached us that St. John's has already done something to stimulate the export trade, and a few good lines have been placed. We have had a fair number of retail Canadian buyers in the market since the beginning of the present month, but their purchases have been most careful. When writing to foreign agents in Canada, I mentioned to our firm, the increase of demand and strain had become painful. A letter from Melbourne, states that the banks, owing to the insecurity which followed the recent financial disaster, were closely restricting advances, and many have become somewhat strained. The depression is described as being very severe, and trade has been growing worse throughout June. In the drapery trade, in particular, goods were being sold without reference to cost, by manufacturers, in a way which was significant of a necessity to realise money and to work off the goods which had been produced. The depression being very severe, and trade has been growing worse throughout June. In the drapery trade, in particular, goods were being sold without reference to cost, by manufacturers, in a way which was significant of a necessity to realise money and to work off the goods which had been produced.
that the Middlesex County Council has decided to spend this year a large sum of money upon technical education; £7,000 has already been allotted for the purpose, and will go towards the foundation of scholarships and the payment of lecturers. It is the intention of the Council to largely increase the grant year by year.

**Continental.**

**BIELEFELD, 9th August.**—Yarns—A good business has been done during the past month both in lanes and tows, taking into consideration the time of year. Spinnings are well supplied with contracts, prices are very firm, and tendency is to take an upward movement at a change. Stocks are in small compass. Linens—The amount of business has been, as a rule, of a limited extent during July, but notwithstanding, satisfactory for this time of the year. Stocks are small, especially in the finer goods used for fronting and shifting linens, cuffs and collars, and manufacturers expect a good business, the more so as the prospect of a good harvest will have a beneficial influence in the development of trade. Prices are very firm, with an upward tendency for the finer sets of cloths; power-loom trade is in full activity.

**LANDESHUT, 9th August.**—The Yarn Exchange on the 4th inst. was attended only by few members. Most of the spinners are under contract for such a long time that they stay away from the Exchange. Prices for tow yarns maintain a steady hold, and there is no sign of any relaxation. When are demanded, which spinners ultimately will get, owing to the raw material keeping at a very high price. Some large contracts for later delivery were entered. Linens—Power-loom trade is still fairly active, and manufacturers have orders on hand. As usual about this time of the year, the production of hand-loomed is small. Next Exchange will be on 7th September.

**BRUSSELS, 9th August.**—Flax—The 1892 crop in Belgium, France, and Holland is likely to turn out the smallest we have had for many years, the short sowing and dry season having both contributed to this result. However, it is generally recognised that the straw, with the exception of that from a few districts, is the best we have had for many years, and, considering the season, has been exceptionally good for storing purposes. It is expected that a considerable quantity of this year’s crop will come on the market, as Courtaulx, from November till next spring, thus confirming a boom on many spinners who are badly in want of flax material; at the same time, it is not probable we shall hear of very long prices for this fine material, as the straw has been sold at prices that have not been heard of for many years past—£232 per 100 for green flax on foot. Yarns—Since the heavy shipments made to Italy and Spain before the end of June, demand has been much quieter, and, if anything, prices have been a shade easier for common lines 20/100. Linens—Up to the present, 1892 has not proved a good year for manufacturers; but should the present harvest, which, as a rule, is exceptionally good, be properly saved, we should see better trade during the next few months than we have seen for many months past.

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**Flax Production in the United States.**

**Extract from a Report by John Hyde, Special Agent, Agricultural Department, U.S.A.**

The total area of land devoted to the cultivation of flax in the United States in 1889 was 1,318,698 acres, or 2,900,47 square miles, the production of flaxseed 10,250,410 bushels, the production of fibre 241,389 pounds, the amount of flax straw sold or used as manure 297,727 tons, and the total value of all flax products $10,436,228.

Although there has been no period when the value of the flax products of the United States has amounted to one-half of one per cent. of the total value of the agricultural products of the country, there has never been wanting a cluster of states in which flax culture was so prominent as to be a matter of considerable importance, while general interest in such crops has always been kept alive by the vagaries of its geographical distribution. Flax production is, in fact, one of those crops that has always been heard through the world as one of the most interesting features of the agriculture of the old world.

The census of 1860 described a flaxseed production slightly in excess of that reported at the preceding census, but the production of fibre showed a falling off of 38 per cent. compared with the previous census, while in the states of the Dakotas, Minnesota, Kansas, and Nebraska, appear in the list for the first time, with a total of 131 bushels of flaxseed and 3,718 pounds of fibre. Of the total fibre production of the country, 90 per cent. was credited to New York and Ohio, while Indiana produced 1,600 per cent. of the total. Of the total fibre production, 50 per cent. is sold in the same state for the production of fibre, but the amount produced in that state was more than three times the present production of the entire country, although it formed but one-seventh of the total of the period under consideration.

The close of the next decade witnessed the high-water mark of fibre production in the United States, the production of 1869 being that of
1889 as 112 to 1. While this country has never yet been able to compete with foreign nations in the production on a commercial scale of the finer grades of flax, such as the Courtrai and best Dutch, and no less an authority than Mr. Charles Richards Dodge seems to doubt whether it ever will, at least so long as the preparation of the fibre requires such an expenditure of time, care, and patience as the consumption of Europe now bestows upon it, it enjoyed for some considerable time a flax industry of no small importance. The manufacture of flax bagging, suddenly put an end to by the abolition of the import duty on jute butts, had doubled the acreage in flax within 3 years. During that period, 1864 to 1869, the production of flax in the United States increased from 1,600,000 bales, or flax bagging measured from three sixteenths to three-fourths, and the baling of the crop of 1870 to 1871, consisting of 4,347,006 bales, was taxed to its utmost the capacity of every bagging mill in the country. Of the 27,133,034 pounds of fibre reported at the close of 1870 as the product of the preceding year, less than half, 17,880,624 pounds, or 63.90 per cent., was produced in Ohio, New York and Illinois ranking second and third, respectively, with a combined fibre production of not quite 6,000,000 pounds. In seed production Indiana again held the second place, Ohio leading, and Illinois standing third, the aggregate reported at the various seasons up to and including that of 1860, contributed to by 33 states and territories. At this classification is found in the list of flax-growing states for the first time.

While the work of the census enumerators has been carefully verified in all cases of doubt, it has not been found practicable so far to extend this accuracy to the extent to which it is necessary in the classification of opinions and growers in general as to the causes that have operated to change so completely the location of the principal flax-producing region. There is, however, no lack of testimony that, notwithstanding the results of chemical tests and the experience of European flax-growers, the farmers of the North have still maintained the idea that the soil of this part of the country is more exhaustive and fruitful, and the past decade having brought under cultivation what little raw land remained to be subdued in those states, flax culture has accordingly given way to other crops.

Concurrently with a greatly reduced acreage in these and other of the older flax-producing sections of the country, there has come an increased demand for flaxseed, which has commanded a price that has rendered it not unfrequently a more profitable crop than either corn or wheat, especially when raised upon the strong soils of the newer states west of the Mississippi river. Although flax is undoubtedly a favourite seed crop with the farmers of the northern states and is extensively raised to a sufficient extent for the purpose of taming the soil is exceedingly unlikely, not only because soils similar to those on which flax is now raised produced magnificent crops of wheat and other cereals long before the cultivation of the flaxseed in these regions, but also because it is not until the soil is thoroughly ploughed in the spring that it is in the older counties, both of Minnesota and South Dakota, that the most remarkable development of flax culture has been witnessed.

Although the agricultural investigations of the eleventh census have been, as a whole, nearly two and one-half times as comprehensive statistically as those of the tenth, such a diversity of the agricultural interests of the country that a few branches of investigation have still had to be confined within comparatively narrow limits. Accordingly, no attempt has been made to ascertain the separate values of flaxseed, straw, and fibre, and the collective values will be found to vary so widely with the variations in the prices out of the proportion borne by each of the three to the entire amount sold. In states where but little is realised from the sale of straw or fibre, there is a close correspondence between the production of flaxseed in bushels and the amount received by the producer in dollars. In many instances it is used for feed, a practice greatly to be deprecated.

In any comparison, however, either of the fibre production of different states or of that of the entire country at different periods, it is important to remember that for a considerable number of years, fibre produced in the United States within recent years has been fit for spinning or has been entitled to the designation that for convenience has been given to it in census and statistical reports. While flaxseed is a well-defined product, subject only to the same qualitative and quantitative variations as agriculture in general, flax fibre as kerseymere, flax sugar, and manufacturer has not always had a like uniformity of meaning. Indeed, the utilisation of the fibrous portion of the flax plant has varied so widely at different periods that any comparison of “fibre” production based solely upon statistical reports is liable to be misleading. The “fibre” reported at the various census up to and including that of 1880 was an excellent grade of scutched flax, fit for spinning, and able to hold its own against all but the finest imported varieties. The “flax” reported at the census of 1870, which was raised to meet the enormous demand for bagging, was, on the other hand, only a very common quality of “low,” abounding in woody refuse, and so carelessly prepared as doubly less in some measure to have led the way for that adverse legislation which practically put an end to its production. The “fibre” of the present day is likewise, with few exceptions, only a coarse by-product used mainly as upholstery tow. As a result, however, of the well-directed efforts of the Department of Agriculture, there are indications of the revival in the United States of a genuine flax industry that should ultimately render the American people, the largest consumers of linen in the world, entirely independent of the foreign manufacturer.

[The Times, 1889]

An English Provincial Technical School.

BY J. W. WERTHEIMER, HEAD MASTER OF THE MERCHANT VENTURERS' SCHOOL, BRISTOL.

(Honoured.)

HOSES interested in technical education may be glad to have some details of an attempt that has been made in Bristol to establish a Technical School, which possesses the most striking features of similar schools on the Continent, and yet be adapted to special British and local requirements. It was with the view in mind that the Society of Merchant Venturers erected the school (which bears its name), and which was opened in September, 1885, that the City of Bristol is the only survivor of many local trade guilds, and still retains its ancient hall as its corporate property. It was in 1880 it decided to devote a considerable amount of its corporate funds to the erection and maintenance of a Technical School, which should be worthy of the educational traditions of Bristol and of all other provincial towns, with institution, as the first step towards the rise of a new building.

The erection of the buildings and the purchase of the fittings and apparatus involved an outlay of £45,000. For this sum buildings have provisioned which in themselves constitute an object lesson in construction, every part being built in a solid and serviceable manner. Now, as Swiss beauty overlooks, the main staircase is of marble throughout, while the woodwork is of the best pitch pine, except in the great hall, which has a carved oak ceiling, as well as oak paneling. The school contains a great hall for public lectures, examinations, etc., to accommodate 900, ordinary class rooms, a large chemical lecture theatre (for 180 students at a time), a smaller chemical theatre, a physical lecture theatre (for 150), an engineering lecture theatre (for 180 students at a time), two chemical laboratories (for 50 at a time), a balance room, combustion room, gas analysis room, physical, metallurgical and biological laboratories, boot and shoe workshop, model workshop, carpenter’s workshop, forge, plumbers’ workshop, two art studios, two rooms, draughtsmen and millinery room, library, engine-room, etc. The departments are fitted out with the latest appliances for teaching and practical work.

There are three distinct branches of the Institution: (a) The Boys’ School; (b) the Upper Technical School; (c) the Evening School.

(a) The Boys’ School is itself subdivided into a Lower and a Middle School. The Middle School boys from 9 to 13 receive teaching in ordinary English subjects, and also in the rudiments of foreign languages, art, drawing, and natural science. It is not intended to continue this part of the work, but to abandon it gradually as the present accommodation for higher schools becomes more and more inadequate to meet the demand. The Middle School (for boys from 12 to 16) has two sides, a commercial and an applied science side. The course of instruction will be readily understood by a reference to the published tables.

The fees in the Boys’ School vary from 5s to 25s 10s. a year.

(b) The Upper Technical School (for boys over 15 years of age) whose students are admitted to all departments on the same terms as men. It is divided into the following sections: — Mechanical engineering, electrical engineering, chemical and metallurgical, applied art and building trades. There is also a special University section for students who wish to take the examination for the degree of B.A. at the University of London. Twenty-six per cent. of the present students are women. The inclusive for the Upper School is £10 10s. a year. The ages of the students vary from 16 to 26, the average age being 18.

(c) The Evening School is intended mainly for artisan and commercial departments of either sex. Its classes are divided into the following departments:

i. Science, including mathematics, theoretical mechanics, applied mechanics, steam, building construction and drawing, machine construction and drawing, navigation (theoretical and practical), sound, light, heat, magnetism, electricity, practical construction, plane and solid geometry, hygience, botany, and zoology.

ii. Art, including drawing, painting, modelling in clay, wood-carving, design, etc.
Chemicals and Dyes.

The chemical trade generally is dull and uninteresting. Alkali makers complain of increasing stocks and a scarcity of specifications. Casatic Soda is weaker, but there is no relapse in the value of Soda Ashes. Ammonia products are difficult of sale, and the improvement which is expected to come with the spring has so far, not shown itself. Sulphate of Ammonia is being sold at £5 10s. to £10 per ton. Liquor Ammonia, Carbonate Ammonia, and Sal Ammoniac are all quoted at lower rates. There is an absolute collapse in the value of Tar products, and Tar, which at this time last year was worth 8d. per 100 lb., is now quoted at 3d. per 100 lb. Distillers will have lost heavily on their engagements during the past year. Carbolic Dye is looking up a little, the demand for sanitation purposes having very much improved. There are no stocks, and this article is likely to see better prices. Dyes and Dyers' Chemicals are all slack, and in poor condition. Synthetic Orange and Allimine, the two staple colours, are lower now than they have ever been known to be before, being quoted at 6d. and 8d. respectively. The higher prices asked for Bichromate stopped business for some time. Buyers now, however, have accepted the inevitable, and the market has resumed its usual state, and a considerable business is being done at the new prices. Oxalic Acid is still quoted at 2d. net, and important business is being done at this price. The various Potash Salts retain their firmness, whilst Nitrate of Soda is weaker.

Selected List of Applications for Patents relating to Textile Fabrics.


P. T. THOMPSON & CO., 6, Bank Street, Manchester; and 328, High Holborn, London, W.C.

The Cotton Mill: a reference manual for Millowners, Managers, Engineers, Spinners, and Manufacturers: comprising data on Hydrostatics, Calories, Dynamics, Mechanics, Physics, and Electricity, as applied to Cotton Mill Engineering. Upwards of forty modern steam engines for spinning, weaving, and dyeing are described. By Chas. W. O. Jordan. 8vo. London: Lancashire & Co., 24, St. Mary's Acre, E.C., and 35, Market Street, Manchester. Size, Royal 4to. A glance at the table of contents shows the comprehensiveness of material this book is, and the manner in which the information is systematically arranged in a form as a whole, so as to be of practical value to all engaged in mill work. To give an idea of the contents and the work, a brief sketch of the contents will show the range of subjects treated. The first section is descriptive; it follows notes on boiler appointments, mechanical stokers, fuel economisers, and the sundry adjuncts of steam. The second part treats of cotton mill construction and fitting up, whereas the third is devoted to machinery. Besides the foregoing, there is a considerable amount of information for mill managers and engineers in connection with machinery and tools, &c., and a number of receipts are supplied. The work is beautifully got up, and the illustrations of mill machinery, &c., are similar. It should find a place in the mill and factory library of every well-ordered establishment.

Everybody's Pocket Cyclopedia. By Don Lemon. London: Saxon & Company, 23, Bouvier Street. Cloth Lid., leather 1/-. The demand for these extremely handy books is enormous. The issue now of this particular volume is the 510th thousand. It is a marvellous little work, dealing with an infinite variety of subjects. It is a very useful book, and furnished with a comprehensive index for quick reference.

Linen Dye Recipe.—For ninety pieces of ordinary linen goods in black.—Enter into a warm bath at 60° C., or 140°F., containing 9-5 lbs. of 6-5 lbs. of, 2-0 lbs. of, 3-9 lbs. of, 2-1 lbs. of, 2-0 lbs. of, 2-0 lbs. of, 2-0 lbs. of, 2-0 lbs. of, 2-0 lbs. of, 2-0 lbs. of. For hand-frothing, then enter in a boiling bath of 62-5 lbs. of, 15 lbs. of, 10 lbs. of, 5 lbs. of, 2 lbs. of, 1 lbs. of, 1 lbs. of, 1 lbs. of, 1 lbs. of, 1 lbs. of, 1 lbs. of. For, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of. For, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of, 2 lbs. of. It should find a place in the mill and factory library of every well-ordered establishment.

AUSTRIAN APPLICATIONS.

Johann Kainerh. — "Boltashing machine applicable for flax and hemp." 19th September, 1841, also a machine for simultaneously breaking and cleaning hemp and flax." 16th September, 1841.

Julius D. Ehrbeng. — "Shutterd protector which, when the loan is no longer in action, raises itself automatically." 23rd January, 1892.

Gustav Ullrich and Hermann Ullrich. — "Improved combing machine." 26th March, 1892.