Irish Linens—Bleaching.—Having briefly alluded to the linen goods of Richardson Sons, & Owden, of Belfast, last week, and having pointed out the great change effected in bleaching by the use of chlorine, we have also to state that much grass bleaching is still practiced in Ireland. The above company have their works at Lisburn, and still conduct the grass bleaching on an extensive scale. It is said that chlorine bleaching injures the ductility of the flax fiber—in common parlance, *burns it.* There can be no doubt but owing to a great amount of carelessness displayed in some bleachworks, this is actually the case, both with cotton and linen fabrics. It is well known to all good housewives that unbleached cotton and linen goods are stronger and more durable than bleached, and that grass bleached factory goods wear much longer than common bleached cloth. In bleaching by chlorine, the green cloth is first boiled in lime water in a vomiting keer for some hours, then it is washed, then subjected for some days to various steepings in chloride of lime liquor and weak sours of sulphuric acid. As it goes through these various chemicalmanipulations, it should be exposed as little as possible to the atmosphere, for when so exposed, an oxydyzing action takes place in the fibres of the cloth, which greatly injures its ductility ; above all, the final washings of bleached goods should be thorough, to remove all the sulphate of lime, or free acid, which otherwise may be left in them, and which we are of opinian is often left in common bleached fabrics. If all cloth—cotton and linen—during the process of chlorine bleaching, were washed in hot water, and plenty of it, its ductility would not suffer so often as by imperfect cold water washings.

To our list of Irish exhibitors of last week, we now add two others ; H. Murland, and the " Belfast Flax Spinning Company." This company exposes some beautiful linen shirtings, handkerchiefs, table-cloths, fine yarns, and a variety of flax fabrics. Having stated last week that Belfast, in the north of Ireland, is the seat of the linen manufacture, we cannot better show the importance, and the rise and progress of that manufacture, than by quoting the following from an address recently delivered in Belfast, by T. O'Hagan—Counseller before the Belfast Workingmen's Association :—

" The true statement of the progress of your northern manufacturers wears almost the appearance of an extravagant fable. Your first spinning factory was built within a quarter of a century. In 1839, 15,000 spindles only were at work ; in 1850, they had increased to 326,000 ; and, in 1853, they numbered 506,000, 100,000 having been added in 1852 alone. In 1839 you had one mill—in 1853 you have nearly one hundred. Your Irish spindles are now more numerous than those of England, or of Scotland, or of any Continental State, and they multiply in a continually increasing ratio.—Again, the growth of flax is extending through the whole kingdom, promoted by the successful efforts of enterprizing men, assisted by the invention of new processes, and encouraged by a consumption which craves an unlimited supply. In 1848, we had 53,868 acres under this crop ; in 1849, 60,314 ; in 1850, 91,040 ; and in 1851 140,536. It is impossible to put any bounds to the advantages that the flax cultivation, rightly prosecuted, may create in such a climate and with such a soil as ours ; and Ireland should surely be roused to prosecute it by the cheering fact that already the linen and yarn exports of Belfast alone are equal to those of all France and Belgium, and the half of Germany besides."

This refers only to the linen mill work, not hand spindles, for the hand spinning and hand loom linen trade were established in Ireland at least two centuries ago.

Scotch Linens.—No fine linens are exhibited by any of the Scotch houses, although it is said that most of the linen trade in Ireland is conducted by Scotch companies, or rather that the cities of Belfast and Glasgow are twin sisters. Be that as it may, Richardson & Co. is an old Irish Quaker House, and probably of English origin. J. Normand, of the old town of Kirkaldy, Scotland, exhibits some very excellent table-cloths, towelling, &c., all woven by the power loom. These fabrics do credit to the mill where they were manufactured. John Adamson, of Dundee, exhibits a very excellent variety of coarse linen goods, both green and bleached. Edwards & Co., of the same place, spread out a good assortment of the same kind of goods. Hugh Samson, of the same place, exposes some first rate sail and tow cloth. These, we believe, are all the Scotch linen exhibitors. Dunfermline is the most distinguished place in that country for the manufacture of beautiful table cloths and damask linens, and yet we could not find a single linen article on exhibition from that place. Dundee is famous for making sail cloth and linen yarn ; most of the coarse linen cloth which is used for making oil cloth in our factories, some of which is of great width, is manufactured there. A great quantity of sail cloth used in our ships is made in Leith, another Scotch town, and yet no article of cloth from that place is exhibited.—Scotland, although extensively engaged in the linen trade, does not make much of a show.—Fine linen spool thread used to be extensively manufactured in Paisley, by Clark & Co., yet we have not been able to see a single spool on exhibition. This linen thread trade had its origin in that town—it is recorded—by a girl named Christain Shaw, who figured as the malignant accuser of a number of persons for witchcraft, during the very time when the witchcraft mania was so violent in our own New England. Some years ago, while on a visit to Paisley, we were shown a place where a number of those poor unfortunate beings who were accused by this girl, suffered death by burning. This Christian Shaw became an expert at spinning fine linen thread, and originated a business in that place for which it afterwards became distinguished.

Flax Culture.—In saying so much upon the subject of linen manufactures, we have had two objects in view, one to present a clear idea of the quality and quantity of articles exhibited ; the other to direct the attention of our people to the importance of the flax culture, for which our country is especially adapted. The demand for flax in Great Britain and Ireland is at present greater than the supply. In 1851 there were no less than 258,415,264 lbs. of flax imported into that country, according to the statement of Prof. Wilson, in his address delivered at Saratoga on the 22nd of last September, before the New York State Agricultural Society.

He said he wished to call particular attention to this ; because he found, on inquiry, that although flax enters largely into the cultivation of some of the west and southwestern States, the seed is the only marketable return which the farmer gets, the straw being entirely neglected. Probably some 200,000 to 300,000 acres have been cultivated this year, producing, according to the best estimates he could obtain, between eight and ten bushels of seed per acre ; which, judging from the relative yield in Europe would give about one ton of straw to the acre, or a gross amount of 200,000 to 300,000 tons. These amounts are very small compared with the capabilities of the districts named.—The opinion that flax is an exhausting crop, has done much to retard its culture ; science shows it to be erroneous. Experiments made for the purpose of testing this point show that flax exhausts the soil much less than wheat. It has a wide range of soils—sandy loam and alluvial soils being the best suited to its cultivation. All the conditions required for its successful cultivation are, that the soil be deep, in good heart and in good tilth, well drained and free from weeds ; if these exist, we may, under ordinary circumstances, expect a good crop.—Owing to the rapid growth of the plant, and the consequent shortness of time it occupies the land, it offers many opportunities to the grower, and admits of more changes in the rotation than most of the other farm crops. Under ordinary circumstances, it is found that the crop succeeds best after corn, or upon recently broken up ground ; and that the crop is not generally so remunerative when it follows turnips, potatoes, or other root crops. The large quantity of organic matter usually applied to such crops has a tendency to make the flax grow rank ; and although a large crop is frequently obtained, the quality is not so good, and the plant is more likely to sustain injury, both from wind and wet, at the time approaching its maturity."

About two bushels of *cleaned* seed to the acre should be sown broadcast by the hand or by the broadcast drill; it should then be covered in by a pair of fine harrows, and a light roller run over it completes the operation. After being properly got in, the only care it requires is weeding. It is important that this be done in a careful and effective manner, as the value of the crop depends materially upon its cleanness. The harvest operations differ slightly from the usual crops ; the proper time is determined by the color of the straw and of the seed. The straw should have assumed a yellow color immediately under the branches, and the seed should, on cutting open the capsule, be of a pale brown color. Flax is always pulled up by the roots. These handsfull are usually laid across each other, and subsequently bound up into small sheaves ; these are set up in circular stooks, the butts of each being spread out as much as possible, to allow the air to have free access to them. There they remain until sufficiently dried ; they are then either stacked in the field or at the homestead ; or the seed is separated at once, and then merely the stem or straw stacked. Many different modes, both of stacking and of separating the seeds exist ; probably the cheapest and most efficient is to pass the straw through plain rollers, which crush the capsule, and let the straw pass through uninjured. The seed is separated from the capsule or " boll," by winnowing, and the straw remains to be stacked in the usual way.

Much remains to be done by our country, in fact everything, for the flax manufacture, as our efforts hitherto have been very feeble in that line. There are about 15,000 spindles in operation in our country (in factories we mean), and these, be believe, make nothing finer than shoemakers' thread. excepting about 1000 spindles, which spin a finer yarn. This should not be said of us while we have a country which can raise any quantity of the best flax.

Many attempts have been made to establish the manufacture of fabrics from flax cotton. At Cohoes, in this State, it has been used sparingly mixed with cotton. All the specimens that we have seen of it, had one defect—shortness of staple : this must operate against its use, for short staple is difficult to spin. Improvements, however, may yet be made so as to produce a long staple capable of being spun on cotton machinery ; but at present Claussen's process has not been able—as promised—to supersede cotton.

Re-organization in the Crystal Palace.—The Exhibition will be kept open all winter, and excellent arrangements have been made for heating it properly. It is at present one of the most comfortable places imaginable. Room will soon be afforded by Mr. Holmes for the exhibition and display of new articles and machines where the carriages are now placed :—these will be removed to another good and convenient situation, so that novel additions may be made to the display. This should, and no doubt will, attract many new visitors.

An invoice of goods to the value of $150,000 has arrived from Turkey. The Pasha of Egypt has also sent some specimens of goods of Egyptian manufacture, which are quite interesting.

During the winter season it would be an excellent plan to get up excursion parties in the country to come to the Exhibition. For such parties only half price is charged, and we have no doubt but arrangements can be made with the various railroads leading to this city, for obtaining tickets at reduced rates. A visit to the Crystal Palace wonderfully expands the mind and strengthens the understanding.

We shall have something more to say in our next, on the treatment of flax in preparing it for carding and spinning. The subject is one which should attract the attention of our whole people.

Trial of Safes.

It was intended to have a trial of all the " fire safes " on exhibition, by submitting them to the action of fire. Only two, however, were entered for the test ; they, it is alleged having been made for the identical purpose, and of little value in themselves, while the others were manufactured at great expense. The two safes tested—Lilly's, and Messrs. Sherwood & Fitzgerald, were placed into a furnace on the first inst., and were kept there until the afternoon of next day—the 2nd, when the firing was stopped and the furnace opened. Lilly's safe with its contents was totally destroyed. Sherwood & Fitzgerald's safe was taken out in good condition—all the books which were contained in it, being in as good order as when put in, excepting the backs of two, which were slightly scorched. Lilly's safe was laid with its door upwards, the other downwards.

(For the Scientific American.)

Trial of Bridges at the Crystal Palace.

A trial somewhat interesting in its character came off on the 29th ult., under the dome of the Crystal Palace, for testing the relative strength of two plans of bridges. The exhibitors are Howe, of Cincinnati, Ohio, and Lanergan, of Boston. The bridges are known as the " Uncle Sam Bridge," and " Lanergan's Truss and Arch Bridge." The span of the models were equal, (14 feet 9 inches between bearings). The Uncle Sam was 14¼ inches deep in the center, and the Lanergan model 25½ inches. Each model weighed 64¾ lbs. The Lanergan model had been built expressly for this trial.—The proprietor of the Uncle Sam having to load his model with two thousand weight for every one which should be placed on the model of his competitor. A large per centage truly, and if such superiority really exists, Mr. Howe has added a new chapter to the history of civil engineering, and I at least shall be glad to know that his has double the strength of any other plan for framing wooden bridges, which superiority I believe he claims—the span and weight being equal. There was some confusion and irregularity in the manner of testing, which leaves the true result somewhat in doubt. The Uncle Sam was loaded with 2,760 lb., and then the Lanergan Bridge with 2,561 lbs., under which it broke. The weight on the Uncle Sam was then increased to 3,428, when the proprietor withdrew it from further test, to the chagrin of some, who in sporting parlance claimed that the bridge should " die game," or bear double the load of its competitor, and under the protest of the parties who entered the Lanergan Bridge.

It is not in my power here to use my own opinion, or to make comments or suggestions, but a new trial under full and specific rules will be necessary before the public will admit that the Uncle Sam has one hundred per cent. advantage over any other system of bridge building.

J. E. Holmes.

Discovery of a New Cave.

The " Calaveras Chronicle" gives the particulars of the discovery of a curious cave in the vicinity of Vallecito. It appears that a Frenchman was at work there at a considerable depth, and his pick displaced a rock, which laid bare an entrance to a large cave. A party afterwards descended and explored the subterranean apartments. Their report is most astonishing. They report that at the depth of about 100 feet, they came upon a collection of over 300 bodies, perfectly petrified ; that the hall contained an immense number of stalactites, some of which rested on and were incorporated with the bodies. Should this rumor prove true, what a glorious subject for antiquarian research.

An Editor Sick.

We notice, by a late number of the Boston " Olive Branch," that the Senior Editor, Rev. T. F. Norris, lies dangerously sick at his residence in Somerville, Mass., and fears are entertained that he will not recover. We regret to learn this, as Mr. Norris has rendered valuable service to the cause of religion and literature during many years of faithful editorial labor. We shall be glad to learn of his recovery. The " Olive Branch," under his charge, assisted by F. W. Rice, and Mrs. Dennison, is deservedly one of the most popular and best conducted papers now published.