Linen Manufactures.—Year after year a prize was offered in vain by the American Institute for the first piece of native linen cloth, and so far as the Crystal Palace is an exhibit of this kind of manufacture, not a case of linen goods is yet to be found in the American Department. This is easily accounted for, but there would be nothing gained by entering into such a disquisition at present; we only hope that the manufacture of fine linen cloth, and other fabrics made from linen will be carried on and conducted with success in our country, before many years pass away. The "cotton manufacture" is one of the most astonishing developments of modern times; it is but a child in comparison with that of the linen, and yet, so far as quantity—the amount of goods fabricated—is concerned, the latter cannot stand any comparison with the former. We are of the opinion, however, although we have no statistical table for reference—that the linen is the most valuable trade; that is, the total value of the linen goods manufactured is greater than that of the cotton. As every manufacture connected with the history of the human race has some interesting reminiscences, that of linen being one of the most ancient, a brief review of its rise and progress will no doubt afford pleasure, and also a considerable amount of information to many of our readers, especially as some modern inventions and discoveries relating to it, have produced changes in some nations, which deserve the name of "social revolutions." The Israelites were no doubt well acquainted with linen, and so were the Persians, and some other oriental nations, but at the same time, it cannot be questioned, but that cotton was also known to the old nations, and this fabric may often receive the name of "linen" in the Bible. Be that as it may, we find that the manufacture of linen goods had arisen to great importance in Europe during the middle ages. Flanders was the focus of the trade, and it is recorded that in one single city—that of Ghent—there were no less than 30,000 hand loom linen weavers in the early part of the fifteenth century. The cities of Bruges, Ghent, Brussels, Antwerp, and some others in the low countries of Europe, were nothing but manufacturing corporations—republics in name and fact—and when banded together they could bring 40,000 hand-loom weavers into battle against the chivalry of Burgundy. Brussels was the most distinguished city for the linen manufacture, especially lace and embroidered work, and at the present day it still bears a high character for such goods. In the Crystal Palace we have discovered only one case of very fine linens from this ancient city, that of Sophie Frenne, in which there is one linen handkerchief, measuring only about sixteen by eighteen inches, and yet the work is so fine and beautiful that it is valued at $500. But it is not a little remarkable that the nation pre-eminently distinguished in the Crystal Palace for its array of linen goods of all descriptions, is Ireland, a country which, when Brussels had perhaps 20,000 linen looms in operation, had not a single one in it from the Giants Causeway to the Cove of Cork. Some parts of France also were early celebrated for the making of "damask" linen goods, and Holland in the sixteenth century bore the highest character for linen shirtings and sheetings. The industrious Flemings—natives of Flanders—were no doubt the first who introduced the linen and woolen cloth Manufacture into England, and this even before the reign, of Edward First, as there was a strong colony of manufacturing Flemings in the city of Berwick when that ambitious king stormed it, and put nearly all the citizens to death. It was not, however, until after the revocation of "the Edict of Nantes," that the linen manufacture began to assume importance in Britain.—The banished Huguenots brought along with them much skill and industry in the making of linen goods. Communities of them established the linen manufacture in Nottingham, England; Dunfermline in Scotland, and Newtown, Stuart, and Ballamena, in the north of Ireland. When we say that cotton cloth was almost unknown in Europe previous to 1750, and that linen cloth alone was used for shirting and sheeting, the necessity and importance of this manufacture then becomes apparent; and when we reflect that the power loom was then unknown, the great number of hand-loom weavers engaged in the business in some of the old cities, excites no astonishment. For a long period the Dutch maintained a national superiority in the bleaching and finishing of linen goods, and previous to 1700, nearly all the cloth made in Britain and Ireland, was sent over to Holland to be bleached. In due time, however, between 1700 and 1774, many large bleach works were erected in Ireland and Scotland. These would be considered curiosities at the present day. The cloth was boiled in various alkaline lyes, and exposed to sunshine and dews, for at least six months before it was bleached. Sour milk was employed in great quantities to assist the process, and it was no uncommon sight around some bleachworks to see twenty acres of grassy meadow covered with fine linen. In 1774 Scheele, the celebrated French chemist discovered chlorine, and its powerful decolorizing qualities having soon afterwards been applied to bleaching textile fabrics, it produced an entire revolution in the whole art, for the processes of bleaching are now completed in a few days, instead of some months as in former times. In 1786 James Watt the great improver of the steam engine, introduced the bleaching by chlorine into Scotland, in the form of chloride of potash, the use of which soon began to spread, and it proved to be the knell of Dutch supremacy in the bleaching and finishing of such goods. In 1799 Charles Tennant, of Glasgow, took out a patent for combining chlorine gas with lime powder, which was also a great improvement, and as the wars of Napoleon at that time prevented Holland and Germany from manufacturing, the linen trade in Britain, and more especially in the north of Ireland, became a fixed and flourishing business. The invention of the power loom in 1786, by Dr. Cartwright, and its application to weaving linen about 1800, put the capstone on British advantages, and this is the reason why, in the Crystal Palace, both France and Belgium fail to make even the shadow of a display in comparison with Ireland—"old things have passed away."

French Linens.—There is one case of linen lawns manufactured at Cambrai, (an old city of Flanders) and exhibited by Bertrand Freres & Henry, of this city—a Paris house;—also one case of fine lawns, by H. Delame & Son, of Valenciennes, France. We have never seen finer or more beautiful lawns than these, and the embroidering of the collars and handkerchiefs, display that neatness and taste for which the French are distinguished. There is also a case of excellent coarse linen goods by Gassot & Co.

Belgian Linens and Lace—Sophie Defrenne, whose name we have already mentioned, is the great exhibitor in this department; besides the hankfs. alluded to, there are many beautiful collars, &c. Millions have heard of the famous Brussels lace, who have never seen a single inch of it; those who are desirous of seeing such goods can be gratified by a visit to the Crystal Palace. Josephine Fassen, also of Brussels, exhibits some beautiful lace collars. The manufacture of Brussels lace is conducted in rooms or apartments having earthen floors, and the atmosphere of which must be kept at a peculiar temperature, and charged with a certain amount of moisture. The success of the manufacture of either fine linen or cotton lawns, depends upon the peculiar state of the atmosphere. Very dry warm, and frosty weather, operate injuriously upon the fine threads; the weaver ceases to ply the shuttle in such weather, until an artificial atmosphere is created, because his threads both warp and woof, become brittle as glass.

German Linens.—Some very excellent table linens, &c., are exhibited by C. Buschek, and Burback & Brothers, of Gotha, exhibit some real serviceable coarse *harn* fabrics, made into buckets, hose, &c.; they also exhibit some excellent unbleached lined fabrics, of various kinds.

Irish Linen Lace and Cloth.—The fine lace belonging to Erin, is displayed in the gallery of the southeast quarter of the British Department. The house of Higgins & Son of Dublin make the finest show we think; the embroidered robes are of great richness and beauty. There is one article exhibited by this House, which is of no little interest to us Americans; we allude to a very rich handkerchief—a present for the Lady of President Pierce. It is contained in a neat frame, close to the balustrade near the picture gallery. The American eagle grasping a shaft of spears in his talons, is worked in each of the four corners, also a ship in full sail, and it has a border of an oaken chaplet. In the centre is a beautiful gold and jewelled pin, in the form of an Irish harp, surrounded with a green shamrock wreath. Forrest & Sons of Limerick and Dublin also exhibit some exceedingly rich robes, collars, handkerchiefs, &c., and the House of A. T. Stewart in this city, exhibit some cases of their imported Irish lace, which is worth a long journey, for all the ladies in our land to look upon and admire. Every single case of the linen laces in the gallery—those of Mrs. Manly and J. McDonald & Co—the latter perhaps the finest of any in the exhibtion—and one piece of pure "Honiton" about two yards long and valued at $1000, as well as those of Higgins & Co.—will afford matter for wonder, at the patience, skill, and trouble expended in decorating the fair and gay, with fabrics fragile as a wintry sun-beam, but at the same time soft and beautiful as the snowy clouds of morning kissing the green valleys of spring.

The more solid articles of linen are exhibited on the floor under the gallery; these deserve the closest scrutiny of every American, as our country is Ireland's best customer. The city of Belfast, in the north of Ireland, is the great depot of the Irish linen trade, and has enjoyed great prosperity for a number of years, especially since the introduction of the power loom, in 1839 (we believe) to that part of the country, from Scotland. Previous to that period both England and Scotland, by employing the power loom earlier, made advances upon this branch of Irish industry, but of late years, the latter has even surpassed itself, and at the present moment in the single province of Ulster, there are more spindles engaged in the manufacture of linen, than in all the countries of Europe, put together, with the exception of Britain itself. The House of Fenton & Son, of Belfast, perhaps makes the greatest display in the Crystal Palace, in heavy, fine, and coarse goods—six cases, such as shirtings, sheetings, table cloths, towels.—The damask table linen exhibited is beautiful. One case exposes flax in every state, from the seed to the fine thread, ready for the weavers *pirn*. This House was awarded a prize medal at the World's Fair. Two very fine pieces of linen exhibited by Bennett & Adams, in a case next to one of Fentons, have a prize medal attached, also granted at the World's Fair. Richardson, Sons, & Owden, of Belfast, exhibit the best piece of heavy sheeting we have ever seen; it has no peer in the Exhibition. It contains 14,700 threads in one square yard—7,200 warp, and 7,500 weft. To our readers who are not particularly acquainted with the art of weaving, we must inform them that cloth made with a finer weft than warp, is much more beautiful and finer in appearance than if the warp and weft numbers were reversed.—Messrs. Richardson & Owden prove themselves to be skillful manufacturers. Their display is very little, if any, inferior to Fenton & Sons, they also have six cases, and likewise can boast of a World's Fair Medal; Ferguson & Co., Belfast, exhibit three cases of drillings, shirtings, and table linen. Wm. Gihon & Sons, of Ballamena, have also three cases of all kinds of linen, and Dunbar McMaster & Co., of Gifford, exhibit two cases of linen thread of various colors, and of numbers from 25 to 300. This thread is neatly put up in skeins and displays great taste. This company has also four cases of what is termed fronting linen, (for shirt bosoms we suppose), but we must delay further remarks until next week.

Next week we will present some interesting information respecting flax, its growth, treatment, &c., and will at the same time have something to say about flax cotton.

Recent Foreign Inventions.

Welding Cast-Steel with Iron.—F. Felix Verdie, of Lorette Loire, France, patentee.—The iron is first heated to a red heat, then coated with borax, after which it is placed in a mould and cast-steel poured into it; after this it is either subjected to the hammering or rolling processes. The quality of borax, in effecting the cementation, in welding iron and steel, has long been known to American mechanics.

Tanning.—F. M. A., of Brussels, Belgium, patentee. The hides or skins, after being prepared for the tanning liquor, are steeped various times (receive various manipulations) in solutions of catechu, and afterwards immersed in a weak liquor of sulphuric acid and water. They are afterwards well washed in clean water.

Gutta Percha Cement—J. W. Duncan, of London, patentee. This cement is for uniting very thin sheets of gutta percha to silk or other fine fabrics. It consists of 40 parts (by weight) of gutta percha, 3 of india rubber, 3 of shellac, 14 of Canadian balsam, 35 of styrax, 4 of gum mastic, and one of the oxyde of lead. These are all mixed together in a stoneware vessel subjected to a heat of about 90° for some time, and stirred well together. It is a useful cement for various purposes.

Preparing Hemp—C. J. L. Cloux, of France, patentee.—The hemp, after being stripped, is put into a vat or tub, with a sufficient quantity of water to cover it. The water is kept at a temperature of about 50 or 60°, for 15 hours, when it is drawn off and replaced by other water, containing 2 lbs. of soda and 2 lbs. of soft soap dissolved in it, for every 100 lbs. of hemp. The heat of this liquor may be 100°, or it may be boiled in it for five hours. The hemp is then taken out and dried in the open air, or in a stove room, at a low temperature. When it is dry it is passed between fine fluted rolls, whereby it acquires the softness of flax without losing its original strength. This treatment of hemp, it is said, enables it to be spun like flax.

Protecting Iron for Roofing, &c.—Nicholas Callan, of Maynooth College, Ireland, patentee.—The sheet iron is first coated with tin in the usual way, and then dipped into a bath of molten lead and tin, and kept there until a sufficient quantity of lead adheres to the sheet along with the tin, to form an alloy coating that will protect the iron aganst the action of the weather, sea water, &c. Some zinc and antimony may be employed in the lead and tin bath.

Lightning Conductors for Ships—Sir Wm. Snow Harris, patentee. The general plan of the improvements consists in the application of a series of plates of metal, to the movable portions of the mast, and to the head of the lower fixed mast, in connection with other metallic conductors, also permanently fixed in series along the shrouds or lower rigging on each side of the vessel, and finally communiating with the sea by metallic connections fixed to the ship's sides. The claim is for constructing lightning conductors for ships and vessels, in such a manner as to cause the metal from the lower masts to pass outside of the ship instead of passing down the lower mast and through the bottom of a ship, as formerly practiced. Sir W. S. Harris is the author of an excellent work on electricity and another on "Lightning Conductors."

[Collated from our foreign exchanges, "Mechanic's Magazine," "Newton's London Journal," "Artizan," "L'Invention," Paris, &c.

Lord Palmerston declares that the cholera is caused by gaseous exhalations, and censures the Scotch Presbyterian Church for requesting a day to be appointed for fasting, instead of exerting their faculties for the removal of such noxious influences.

Chemical Red Fire.

Take three parts by weight, of powdered celestine, two of sulphur, and three of the chlorate of potash, and mix all together; this mixture will be of some service to those who manufacture *fire-works*.

The ship Victoria arrived at this port on last Saturday, from Australia; this is the first ship which ever came here direct from that country.