Flax Culture.—In addition to what we said last week on linen and the flax culture, we will proceed to present more information on the subject.

When the crop of flax is taken from the field, it is divided; the seed being directly serviceable to the farmer as a valuable feeding substance, or for sale in the market to produce oil. The straw is of little value until it undergoes certain processes, which change its character entirely. The bundles of flax after being taken from the field are first rippled, which is done by drawing it by handsfull through an iron comb set upon a horizontal beam; this removes the seed; the seeds, however, if the flax is fully ripe, can be removed by passing the straw between rollers.

Flax straw consists of two distinct parts, the woody and fibrous, the latter is the only part used for making thread, cloth, &c., and must be separated from the woody parts, which are i nthe interior of the stalks, and named *boon* and *shives*. It is very difficult to separate the woody from the fibrous parts, hence many plans have been tried for this purpose. The old way is to ferment the flax by steeping it in pools for some days, or by dew rottings, whereby the chemical action leads to the easy separation of the parts, afterwards, by scutching. A patent for *steam* rotting was taken out in the United States in 1825 by A Chinn, of Ky., and about 115 patents have been taken out at different times for improvements in flax machinery. When we look at such a list, we are more than surprised at the little which we have done in the manufacture of linen. For *water*-rotting flax the bundles are placed in layers over each other in the water, or they may be placed upright. They are covered with boards, and these are pressed down with stones to keep the flax about one foot beneath the surface. The fermentation makes the flax buoyant, so that care must be exercised to keep it under the water. When fermentation ceases, the bundles sink, and whenever this is noticed, samples of the flax should be examined twice each day, in order to guard against over-rotting, which injures the fiber. The rotting is completed when the *boon* is found to break without bending, or when several stalks knotted together sink to the bottom if thrown into the water. The time occupied in rotting is from 5 to 15 days. A tank with soft water is a good place for rotting, but the water must be changed two or three times during the operation. A running stream or stagnant pool will answer, but it is best to have a small stream running through the pool. When the flax is properly rotted, it should be rinsed in clean water, then dried in the sun.—By rotting it loses 30 per cent. in weight. Water rotting is an unhealthy operation, and should always be avoided if possible. By exposing flax to the dews and sunshine, on meadow lands for about 28 days, the same object will be obtained and a better quality of flax produced. Three other processes of fermentation have recently been introduced into Ireland, one from Germany named Schenk's process, the other two from Scotland are considered the best. These are as follows:—

Watt's Process.—The straw is placed in steam tight chamber, of a suitable size and shape, the top being formed by an iron tank containing cold water, and the lower end having a perforated false bottom, at about 12 inches from the other. Steam at a low pressure s then blown from a boiler, through a pipe into the steaming-chamber, and passing up through the straw, comes in contact with the iron top, by which it is condensed; then, trickling down the spikes, fixed there as points of dispersion, through the mass, it is passed through the false bottom, carrying with it the extractive matter thus dissolved out of the straw, which is drawn off by a waste pipe into a vessel or tank below, in which it is preserved for use as a feeding substance. This is continued for from 10 to 12 hours. The straw is then removed, and is passed through four sets of smooth rollers, which squeeze out about 80 per cent. of the water, and at the same time crush the stems, breaking up the central woody core or "shive," and materially assisting its subsequent separation from the fiber. From these rollers it is carried to the drying-house, which is heated by steam pipes from the boiler, and thence to the scutching frames, where the operation is performed more rapidly and efficiently than when the flax is prepared by the ordinary method, owing to the thoroughly crushed state in which it comes from the rollers. This flax is then ready for market, having passed through the whole process, from the raw material to the prepared fiber, in the short space of about 36 hours.

Buchanan's Process.—In this the steeping is effected by repeated immersions in a tank of heated water, arrangement being made by which the temperature is never allowed to exceed a certain degree—a point of great importance, both as regards the abstraction of the azotized extractive matter, and also the quality of fiber produced. Still another improvement is claimed by Buchanan, in his method of drying the steeped straw preparatory to scutching, which he does by dry warm air driven through the same vat in which the flax is steeped.

Some plan should be adopted by our farmers for saving their flax straw, and paying back to Ireland with the raw material at least, part if not all, of the large sums we pay for linen.—This will not interfere with the cotton trade, for at the present moment England and Ireland get their outside supplies principally from Russia; they would rather get it from the United States. England imported from Russia and other European ports in 1851, 124,784 tons of dressed flax and hemp, which was valued at $25,500,000. We could supply all this, and yet we pay about $15,000,000 for linen goods every year, and our farmers do not seem to be aware of what they can raise, and pay for by a fair exchange. They should see well to this.—We will close our article on flax by describing the mode of saving flax straw to be steeped by Watt's or Buchanan's process.

The flax stems are to be put together in bunches, about one half larger than can be grasped in one hand, spread out a little, and laid in rows after each puller, the roots and tops alternately, which will prevent the seed-balls from adhering in being lifted. Except in settled weather, the *stooking* should never be allowed to remain undone over night, but gone into at once. The flax should be handed to the stooker by the tops, the handsfull as pulled being set up against each other, the tops joining like the letter A. The stooks are made 8 or 10 feet long, a strap keeping the ends firm; they should be thinly put up, narrow at the top, so that they may get the full benefit of the exposure. In six or eight days after pulling, the flax should be ready to be put up in sheaves similar in size to those of oats. It is then put up into ricks, and allowed to stand until ready for stacking. The sheaves should not be made too large, as in this case the outside straw is discolored by the sun before the interior is dry. In making the rick, lay two poles parallel on the ground about one foot asunder; they should be laid north and south, so that the sun may beat on both sides of the rick during the day. A strong, upright pole is put at each end of the horizontal ones. The flax is then put up between them, the length of a sheaf in breadth. The sheaves are to be placed top and root alternately, from 7 to 8 feet high; the top finished by laying a single row lengthwise, or across the others; another row as before, but with the tops all one way; by this arrangement, a slope is formed for drawing off the rain; the rick is finished by placing stones on the top, and secured with a rope. Thus built, the rick will stand for months—it can be stacked at leisure, put into a barn, and kept stacked for years without any injury.

Other Linen Articles.—It was our original intention to notice briefly each case and parcel of every linen exhibitor in the Crystal Palace.—Such a task, amid such a display, our readers must acknowledge would not be easily accomplished. We have still a few to add to our previous list. We believe that we have left no parcel unexamined in the whole Exhibition.

Holland Linens.—A. I. Ten Dosschate, but whether of Amsterdam or Haarlaem, we could not learn, exhibits some of the famous Holland sheeting, and drilled goods, and damask table linen—in all 20 pieces. None of them are fine, or to be compared with the Irish linen, excepting in strength; they are strong, well woven, and made of the best flax.

Austrian Linen.—Wodl & Gorgias, of Vienna, exhibit a very large assortment of linen goods—about 50 pieces. One piece of shirting equals, we believe, any in the Irish Department. This Austrian Linen House must carry on the manufacture on an extensive scale. They display fine shirting, bleached and unbleached, white and green drilling, damask table linen and toweling. Two pieces of plain sheeting 4 feet wide, are splendid specimens of goods, The Austrian linen does great credit to the manufacturers of it.

Another Case of Irish Muslin.—We had omitted to mention one very important case of Irish sewed muslin, namely, that of John Holden & Co., of Belfast, the largest manufacturers of sewed linen muslin goods, it is stated in the world. The embroidery is all done by hand; the pieces are all given out, and the work performed by females in their cottages throughout every county in Ireland. No less than 10,000 persons are employed by this house, and they pay out for wages alone, about $10,000,000 annually, according to statements made by themselves—this is a large sum truly, and we are inclined to accept the statement with caution. The case Exhibited by this House contains collars, robes, handkerchiefs, &c., a most beautiful and elegant assortment.

American Linen Thread.—The only productions of American flax, that we have been able to search out, is one case of linen thread by James French, of the Lambertville Flax Mill, N. J. The articles embrace fine linen twine, yarn, and shoemakers thread, put up in balls. This thread is good and well put up.

Flax.—There is but a mere handful of American Flax on exhibition, prepared by F. A. Bevans, of New Haven, Conn., and dressed on Chighester's machine, which has been illustrated in our columns. These few specimens look well; we are sorry that they exhibit so small a quantity; we could put it all in a snuff-box.

American Hemp.—There are six bales of American hemp on exhibition; one is from Newmarket, N. J., by W. Vail & Co.; the other five bales are from Missouri and Kentucky. Holiday & Dickey, of Weston., Mo., Baker, Bell & Co., same place, and Glass & Beer, of St. Louis, Mo., exhibit one bale each of beautiful undressed dew-rotted hemp. John Hunter, of Lexington, Ky., and Thomas Hemingway, of same place, exhibit one bale of dew-rotted hemp. We must say that these five bales of hemp do credit to their exhibitors; the color is good and the quality excellent.

American Silk.—We witnessed with pleasure some additions to the articles of American silk previously exhibited. The skill displayed in the manufacture of this beautiful fabric, affords us much satisfaction. One case of silk thread of various colors, put up in balls, is worthy of attention. The articles consist of handkerchiefs, checked, striped, and flowered, striped silk for ladies' dresses; vestings and thread, and some beautiful samples of raw silk, impresses us very favorably with the kind of silk which can be raised in our country. We are confident that it is equal to the Italian. We have always been of the opinion that silk can be raised, and goods manufactured in the United States, of as good quality as any in the world. These articles afford conclusive proof of this opinion. The factory where these goods were made, and the only one, we believe, in our country—using American silk—is located opposite Cincinnatti, in Newport, K y.

Inventors National Union.

We have received a copy of the Constitution and By-laws of an Association formed in this city, bearing the above title; we shall read this document carefully, and present our opinions on it next week.

Manufactures of the City.

We have been looking about town during the past week, visiting some of the principal manufacturing establishments, and thinking it may prove interesting to our readers, we propose laying before them a briefaccount of what is doing in here. We do not think our readers are aware of the immense industrial interests of this city. There are three establishments which employ 2100 hands. We will this week notice some of the principal iron foundries.

The Allaire Works, 466 Cherry street, are among the oldest in the city. They were founded by James Allaire, in the year 1810; they are engaged in the manufacture of steam engines and boilers, heavy machinery and indeed a general machine business, but principally engines for ocean, lake, and river steamers. T. F. Secor and J. Breasted are the proprietors; they have at present in their employ about 600 hands.

They are now engaged in constructing two beam engines with cylinders of 81 inches bore and 12 feet stroke for two boats being built at Buffalo, for I. Newton, of this city, and the Mich. Central and N. Y. Central Railroad Companies, to form a connection of the two roads between Buffalo and Detroit. They are also building a beam engine to run in connection with the Black Warrior, between this city and Mobile; cylinder 75 inches in diameter, 11 feet stroke. The ship is now building at Collyer's Yard, 19th street. They are likewise building an engine of the same size as the above for E. Mills' new steamer "Yankee Blade," which is now at the wharf receiving her engine and boilers. Another is being built with cylinder of 76 inches diameter, and 12 feet stroke, for the New York and Stonington line.

The Novelty Works, the largest in the city, are conducted by Messrs. Stillman & Allen. They are situated at the foot of East Twelfth street. The number of hands at present employed is about 900. Their business is a general machine business, but especially the manufacture of steam engines. They are now finishing a side lever engine for the "Nashville," of 85 inches diameter and 8 feet stroke of cylinder, and an oscillating engine of the same dimensions for the "Knoxville," Savannah Line, Capt. Ludlow.

They are also constructing for the Bay State Co.'s New Fall River boat, the largest engine that ever was built in this or any other country. The diameter of cylinder is 105 inches, and the length of stroke 12 feet. This is a monster indeed, but though the largest steam cylinder it is much less in size than those "hot air" cylinders, two of which succeeded in propelling the "Ericsson" last winter at the average rate of something less than three miles an hour.

The repairs of the Collins' line of steamers are all done at these works. The total amount of their business exceeds, annually, one and a half millions of dollars.

The Morgan Iron Works, Quintard, Merritt & Co., proprietors, employ about 600 hands; their business is much the same as those already mentioned. They have just finished a pair of engines for the "San Francisco," to run between that place and the Isthmus, in Howland & Aspinwall's line. They are oscillating engines 65 inches bore and 8 feet stroke; they are furnished with Ericsson's condensers, and the boat is fitted with a new plan of feathering wheels. They are also building two pair of engines for Pacific steamers of 50 inches bore and 10 feet stroke, one of 65 inches bore and 11 feet stroke for Harris & Morgan, of New Orleans, to ply between that place and Vera Cruz, and another 60 inches diameter of cylinder and 11 feet stroke of piston, to run between New Orleans and Galveston.

They are also building for the Union Ferry Co., between this city and Brooklyn, an inclined engine of 38 inches bore and 9 feet stroke, and for the Norwich and New London's Co., steamer, a vertical one of 76 inch bore and 12 feet stroke.

All these works turn out engines of superior finish, and excellent model, and some of the brass work, such as gauges, indicators, &c., are exceedingly beautiful.