...failing to grow, and nearly half of those planted by Messrs. Bullard, Mann, Hancock, and Morse. To promote smoothness, Mr. Sargent laid rye straw in the bottom of the drills, planting the sets upon the top and then covering with soil. For the same purpose Mr. Bullard used forest leaves in the bottom of his drills. As the season was dry at the time of planting, and for some time afterward, this proved a serious damage, although the quality of their product was unexcelled. Messrs. Hancock, Clark, Adams, and Hood depended chiefly upon stable manure, while Messrs. Morse, Bullard, Sargent, Squire, Mann, and Cheever used principally guano and other commercial fertilizers. Mr. Adams, we believe, applied considerable potash in the form of spent lye, and from this or other causes had a very inferior crop of scabby potatoes. Mr. Squire used Peruvian guano at the rate of 800 pounds per acre, and sulphate of potash 200 pounds per acre. Mr. Hancock applied a two-horse cart load of stable manure to the rod, plowed in, and nine pounds guano sprinkled in the hills. Mr. Cheever plowed in a light coat of manure, and applied guano and sulphate of potash, at the rate of 1,000 pounds of the former and 400 of the latter per acre. Mr. Morse used 800 pounds of guano and 200 pounds of potash per acre. Mr. Clark applied stable manure freely and watered the ground occasionally after the potatoes were growing, with a solution of hog manure and poultry droppings. Mr. Hood used a spoonful of Bradley's superphosphate in the hill. Messrs. Hancock, Hood, and Adams had each about fifty hills, while Mr. Clark had 125 hills. Mr. Squire planted in five double rows or drills, the seed being just twelve inches apart each way, with room for horse cultivation between. Mr. Morse practiced horse cultivation exclusively, never using a hand hoe at all, either in covering or tending the crop, while Messrs. Clark, Hood, and Cheever cultivated by hand exclusively. Mr. Squire cut his seed in halves, planting one piece in a place. Mr. Mann used pieces with two eyes, while most of the others were cut to single eyes. Mr. Hood cut his seed two weeks before planting, and found it much dried, but only one hill failed. The lots were planted from May 6th to June 8th, and were dug at three different periods, several competitors being in each case present and taking part in the measuring of the land, and weighing the crop.

By mutual agreement the competitors were required to act also as judges, and, after inspecting the several yields, they unanimously decided that the 183-pound lot, though not quite equal in quality to two or three of the smaller lots, was nevertheless, on account of both quality and quantity, entitled to the first place on the list. The 1,013 pounds, or 16 53-60 bushels of potatoes, grown on ten square rods by ten competitors, was, therefore, awarded to A. W. Cheever, who in response to the announcement stated that although at the urgent solicitation of his friend, Mr. Morse, the challenger, he had joined in the competition, and had done his best to give some one a handsome yield of potatoes, yet with his well-known views concerning the injurious tendency of all forms of games of chance in which one man's luck is another man's loss, he could accept only those grown upon his own plot; and as parties had expressed a desire to secure seed for planting from these trial lots, he would direct that they be sold at auction, the proceeds to be placed in the treasury of the club, to be used toward paying for a lecture during the coming winter. The other competitors agreeing to the same arrangement, the whole lot was sold, netting to the club the sum of \$11.47, thus closing a competitive trial in which valuable experience had been gained by all and without loss to any. The following is the

STATEMENT OF A. W. CHEEVER.

The land on which I grew the trial rod of potatoes has been under cultivation several years, producing chiefly forage crops. Last year it produced a crop of rye fodder and a crop of oat fodder, and these were followed by a crop of barley, each crop being manured either with stable manure or commercial fertilizers. The soil is a heavy loam exposed to the East, quite moist early in the season, so that an early plowing caused it to form somewhat into lumps which remained unpulverized during the season. It was plowed but once this year, a light coat of stable manure being turned in about seven inches deep. This was somewhat mixed with the soil by deep cultivation after plowing. The rows were marked out with a large cultivator tooth about eighteen inches apart, run quite shallow, so that the potatoes, when planted, were scarcely below the surface of the ground.

Before planting, about 800 pounds of guano, and 400 pounds of sulphate potash, per acre, were spread broadcast over the furrows. The seed was prepared by exposure several days to a strong light, to start the sprouts into a short, healthy growth. When ready to plant, single eyes were cut from the seed, selecting only those which were well started and of good, strong appearance. Most of the eyes were cut from the stem end or middle of the potato, where considerable potato could be taken out with each eye. As they were cut, they were laid in a basket, with plaster dusted over them in sufficient quantity to cover the cut surface, and to partially protect the sprouts from bruising while being handled. The pieces were dropped singly, and about fourteen inches apart, the whole amount of ground planted in this way being from two to three rods.

The sets were covered by hand not over an inch deep. Just as the shoots were breaking ground, the plot was dusted over with guano, at the rate of 200 pounds per acre, and then raked into the soil with a garden rake, killing, at the same time, all the small weeds which had started. As the potatoes were so near the surface, and so thickly planted, it was found impracticable to hill them in the ordinary way, so the ground was mulched with chopped straw for a protection, not only against weeds, but to keep the new potatoes from being sunburnt as they showed themselves above the surface. The mulch also, in a measure, secured a cool, moist soil during the hot, dry weather of midsummer. The straw was put on some three inches deep, but soon settled to one inch, and was then covered with a second coat of mulch which remained undisturbed till digging time.

To keep the bugs in check, a sprinkling of dry plaster was used three or four times, with just enough Paris green to shade the plaster, giving it a slight greenish tinge. A very few weeds were pulled by hand during the season of growth, but it was the aim to travel over the patch just as little as possible, as the plants covered nearly the whole surface. The rod of land was measured off from near the center of the patch, at digging time, by Horace Morse and S. W. Squire, and the potatoes weighed by Mr. Morse, who certifies that there were 183 pounds—a yield per acre equal to 488 bushels. The most important lesson I have learned by the experiment is that potatoes must have room to grow under ground, or the yield will be diminished and the quality impaired. I would never plant so near the surface again,

and with an equally favorable season should expect to do better another year.—*New England Farmer.*

THE FOUNDING OF LOWELL.

By JAMES PARTON.

We do not often hear of strikes at Lowell. Some men tell us it is because there are not as many foreigners there as at certain manufacturing centers where strikes are frequent. This cannot be the explanation; for out of a population of forty-five thousand, there are sixteen thousand foreign-born inhabitants of Lowell, of whom more than ten thousand are natives of Ireland. To answer the question correctly, we must perhaps go back to the founding of the town in 1821, when there were not more than a dozen houses on the site.

At that time the great water power of the Merrimac River was scarcely used, and there was not one cotton manufactory upon its banks. At an earlier day this river and its tributaries swarmed with beaver and other fur-yielding creatures, which furnished a considerable part of the first capital of the Pilgrim Fathers. The Indians trapped the beaver, and carried the skins to Plymouth and Boston; and this is perhaps the reason why the Merrimac and most of its branches retain their Indian names. Merrimac itself is an Indian word meaning sturgeon, and of its ten tributaries all but two appear to have Indian names: Contoocook, Soucook, Suncook, Piscataquog, Souhegan, Nashua, Concord, Spigot, Shaw-shine, and Powwow.

Besides these there are the two rivers which unite to form it, the names of which are still more peculiar: Pemigewasset and Winnepiseogee. The most remarkable thing with regard to these names is, that the people who live near see nothing remarkable in them and pronounce them as naturally as New Yorkers do Bronx and Croton. It is difficult for us to imagine a loversing or saying, "Meet me by the Pemigewasset, love," or asking her to take a row with him on the lovely Winnepiseogee. But lovers do such things up there; and beautiful rivers they are, flowing between mountains, and breaking occasionally into falls and rapids. The Merrimac, also, loses its serenity every few miles, and changes from a tranquil river into a water-power.

In November, 1821, a light snow already covering the ground, six strangers stood on the banks of the Merrimac upon the site of the present city of Lowell. A canal had been dug around the falls for purposes of navigation, and these gentlemen were there with a view to the purchase of the dam and canal, and erecting upon the site a cotton mill. There names were Patrick T. Jackson, Kirk Boott, Warren Dutton, Paul Moody, John W. Boott, and Nathan Appleton—all men of capital or skill, and since well known as the founders of a great national industry. They walked about the country, observed the capabilities of the river, and made up their minds that that was the place for their new enterprise.

"Some of us," said one of the projectors, "may live to see this place contain twenty thousand inhabitants."

The enterprise was soon begun. In 1826 the town was incorporated and named. It is always difficult to name a new place, or a new baby. Mr. Nathan Appleton met one of the other proprietors, who told him that the legislature was ready to incorporate the town, and it only remained for them to fill the blank left in the act for the name.

"The question," said he, "is narrowed down to two, Lowell or Derby."

"Then," said Mr. Appleton, "Lowell by all means."

It was so named from Mr. Francis C. Lowell, who originated the idea. He had visited England and Scotland in 1811, and while there had observed and studied the manufacture of cotton fabrics, which in a few years had come to be one of the most important industries of the British Empire. The war of 1812 intervened; but, before the return of peace Mr. Lowell took measures for starting the business in New England. A company was formed with a capital of four hundred thousand dollars, and Mr. Lowell himself undertook the construction of the power loom, which was still guarded in Europe as a precious secret. After having obtained all possible information about it, he shut himself up in a Boston store with a man to turn his crank, and experimented for months till he had conquered the difficulties. In the fall of 1814 the machine was ready for inspection.

"I well recollect," says Mr. Appleton, "the state of admiration and satisfaction with which we sat by the hour watching the beautiful movement of this new and wonderful machine, destined as it evidently was to change the character of all textile industry."

In a few months the first manufactory was established in Waltham, with the most wonderful success. Henry Clay visited it, and gave a glowing account of it in one of his speeches, using its success as an argument against free trade. It is difficult to see what protection the new manufactory required. The company sold its cotton cloth at thirty cents a yard, and they afterward found that they could sell it without loss at less than seven cents. The success of the Waltham establishment led to the founding of Lowell, Lawrence, Nashua, and Manchester. There are now at Lowell eighty mills and factories, in which are employed sixteen thousand men and women, who produce more than three million yards of fabric every week. The city has a solid, inviting appearance, and there are in the outskirts many beautiful and commanding sites for residences, which are occupied by men of wealth.

But now as to the question above proposed. Why are the operatives at Lowell less discontented than elsewhere? It is in part because the able men who founded the place bestowed some thought upon the welfare of the human beings whom they were about to summon to the spot. They did not, it is true, bestow thought enough; but they thought of it, and they had some provision for proper and pleasant life in their proposed town. Mr. Appleton, who many years ago took the trouble to record these circumstances, mentions that the probable effect of this new kind of industry upon the character of the people was most attentively considered by the founders. In Europe, as most of them had personally seen, the operatives were unintelligent and immoral, made so by fifteen or sixteen hours' labor a day and a beer shop on every corner. They caused suitable boarding-houses to be built, which were placed under the charge of women known to be competent and respectable. Land was assigned and money subscribed for schools, for churches, for a hospital. Systematic care was taken to keep away immoral persons, and rules were established, some of which carried the supervision of morals and manners perhaps too far. The consequence was that the daughters of farmers, young women well educated and well bred, came from all quarters, and found the factory life something more than endurable.

But for one thing they would have found it salutary and

agreeable. The plague of factory life is the extreme monotony of the employment, and this is aggravated in some mills by high temperature and imperfect ventilation. At that time the laws of health were so little understood that few persons saw any hardship in young girls standing on their feet thirteen, fourteen, fifteen, and even sixteen hours a day! It was considered a triumph when the working-day was reduced to thirteen hours. Thirty years ago, after prodigious agitation, the day was fixed at eleven hours. That was too much. It has now been reduced to ten hours; but it is yet to be shown that a woman of average strength and stamina can work in a cotton mill ten hours a day for years at a stretch, without deteriorating in body, in mind, or in character.

During the first years the girls should come from the country, work in the mill a few months, or two or three years, and then return to their country homes. Thus the injury was less ruinous than it might have been. The high character of the Lowell operatives was much spoken of in the early day. Some of the boarding-houses contained pianos upon which the boarders played in the evening. A magazine, called the *Lowell Offering* was sustained by them for several years. I have before me at this moment the number for August, 1844. It is a very neat and creditable production, filled with poetry, stories, and sketches, written by the "mill girls," as they termed themselves. The most interesting article in this number is one of a series of "Letters from Susan," in which the writer gives a very amiable and interesting account of mill life. According to Susan, the mills themselves were pleasant places, the rooms being "high, very light, kept nicely whitewashed, and extremely neat, with many plants in the window-seats, and white cotton curtains to the windows."

"Then," says Susan, "the girls dress so neatly, and are so pretty. The mill girls are the prettiest in the city. You wonder how they can keep so neat. Why not? There are no restrictions as to the number of pieces to be washed in the boarding-houses. You say you do not see how we can have so many conveniences and comforts at the price we pay for board. You must remember that the boarding-houses belong to the company, and are let to the tenants far below the usual city rents."

Much has changed in Lowell since that day, and it is probable that few mill girls would now describe their life as favorably as Susan did in 1844. Nevertheless, the present generation of operatives derive much good from the thoughtful and patriotic care of the founders. More requires to be done. A large public park should be laid out in each of those great centers of industry. The abodes of the operatives in many instances are greatly in need of improvement. There is need of half-day schools for children who are obliged to assist their parents. Wherever it is possible, there should be attached to every house a piece of ground for a garden. The saying of the old philosopher is as true now as it was in the simple old times when it was uttered: "The way to have good servants is to be a good master."—*New York Ledger.*

AMERICAN POTTERY INTEREST.

JOHN A. NORTON, Esq., writing from East Liverpool, O., to the *Chicago Journal of Commerce*, gives a full and interesting sketch of the rise and progress of the pottery interest at that place, and continues.

In ceramic art, East Liverpool occupies much the same relation to this country that Staffordshire does to Great Britain. She has eleven Rockingham and yellow ware potteries, with twenty-six kilns; eight potteries for the production of ironstone china, with twenty-nine kilns; four potteries for the manufacture of "C. C.," or cream-colored ware, with ten kilns; two knob potteries, with three kilns; four decorating establishments—including one with Knowles, Taylor & Knowles—with six kilns; one flint and spar mill, where flint and spar are ground and prepared ready for potters' use, with one kiln for calcining the work preparatory to grinding. Here are altogether twenty-six potteries, with seventy-five kilns. Most of the kilns erected during the last two years have been fifteen to sixteen and a half feet in diameter in the clear, and from fifty to sixty-five feet in height, having a capacity to hold from 2,500 to 3,200 dozen pieces of ware each. A factory for the manufacture of encaustic tiles was started here a few years ago, but the parties controlling it not having sufficient capital to carry on the business with strength, it proved unsuccessful. The works have been converted into a factory for the production of C. C. ware. Over \$1,000,000 are employed in the industry, nearly 2,000 hands, and the works have a productive capacity exceeding \$1,500,000 per annum. The extensive additions recently made to old works, and the building of new ones here and in other places, afford great encouragement to owners of clay, flint, and spar mines, whose products enter into the manufacture of white ware, to properly develop them and provide for the greatly increased demands now thrust upon them. One of the strongest arguments in favor of stability and permanence in the protective policy lies in the fact that often a heavy capital must be expended in developing mines to furnish the raw material for manufacture, and owners of clay, flint, and spar mines have been reluctant to expend the money necessary for their proper development, fearing that, by the time they had done so, a free-trade congress would reduce duties upon crockery ware, rendering the continuance of the business unprofitable, their investments valueless, and themselves bankrupt.

Our country is wonderfully rich in the raw materials needed for the manufacture of earthen and china ware, and if our tariff is maintained, and the duties honestly collected, the next fifteen years will witness the development of the manufacture of fine china ware on a scale corresponding to that already realized and now going forward with such grand strides in the manufacture of ironstone china.

The States of Illinois, Indiana, Missouri, and several Southern States, have clays of superior quality for producing the most delicate china ware that can be made; but with a lowering of the tariff we may bid good-by to our hopes of having that valuable industry naturalized upon our soil on an extensive scale for many years to come, much as the system is vaunted in certain quarters.

Two centuries of free trade would not have witnessed the development in our country of the ceramic art to the point to which it has now attained. More than half of the hands employed in the potteries are American-born, and those apprenticed and trained under the eye and supervision of the potters make excellent workmen. The ceramic art is a difficult one to carry to a high standard of excellence, and every skilled workman therein ought to have an eye and hand trained in the arts of design and become acquainted with chemistry. The master potters, of course, suffer greatly for the want of a wise and proper apprentice law, but the youth of the land suffer a thousand-fold worse. With the