

Scientific American.

NEW YORK, JUNE 27, 1857.

Progress of Railroads.—The Great West.

The opening of the Ohio and Mississippi Railroad, which took place on the 5th inst., was an event long to be remembered by those who were permitted to participate in the ceremonies. By an arrangement made with the various railroad companies of the east and west, from three to four thousand excursion tickets were issued, and on the first of the month a regular heira began to pour over the great avenues of trade leading westward. It was a very pleasing feature of the whole affair that no serious accident occurred to mar the pleasure of the occasion; and the inception and termination of the whole event reflects great credit on the directors of the company under whose management it was carried out. Many of the business and professional men of the east had never before visited the great West; and probably hundreds who joined this excursion would have lived and died ignorant of its true character, had not this opportunity been presented to them.

The new link of railroad which led to this celebration is one of a great national chain extending from the lumber regions of the Penobscot to western Missouri. Commencing at Bangor, Me., this chain passes through a majority of the largest cities in our country, such as Boston, New York, Philadelphia, Baltimore, Cincinnati, and St. Louis. The whole length completed, is one thousand four hundred and forty-six miles; the Ohio and Mississippi link, just finished, is about three hundred and thirty-nine miles long—from Cincinnati to St. Louis. We arrived at the "Queen City of the West"—the name given by the Buckeyes to their beautiful commercial emporium—on the evening of the 5th, and left early next morning on the grand excursion; we therefore had no opportunity of visiting the various places and objects of interest in this growing center of business in the Ohio valley. At St. Louis, however, we had two days to spare, and spent them pleasantly in the examination of objects interesting to the friends of industry, science and art. Owing to its favorable position, St. Louis is the metropolis of the Mississippi valley; it is even now a great and wealthy city, but when the vast natural resources of Missouri and the metallic products of the West are fully developed, she will be an Ajax among the commercial emporiums of the New World. The national chain of railroad we have described will be continued in a few years to California, and thus unite in iron bands the two great oceans of the world. St. Louis, being situated on the west bank of the Mississippi river, will always be a natural depot of this great continental highway, and cannot fail in rising to magnificent proportions.—Many of its citizens are men of cultivated tastes, and devoted to scientific pursuits; it has an Academy of Sciences, with an excellent museum, embracing a good collection of geological and anatomical specimens. In this particular feature it is a step in advance of New York, which cannot yet boast of such an institution. It is remarkable for the number and the beauty of its public buildings; has a population of over 100,000 inhabitants, and a water communication of 8000 miles extending in different directions. It is also connected to the great northern fresh water seas of our inland navigation by the Chicago and Alton railroad, which passes through the most fertile regions we have ever had the fortune to gaze upon.

On our return journey we tarried at Chicago which is the great city of the Northwest. It was only incorporated in 1836, with a mere handful of inhabitants; now it has a population of 100,000, and is the center of the upper lake commerce. A very large capital is invested in the manufacture of steam engines and railway cars; and it is the focus of the manufacture of agricultural implements for the western farmers. We were particularly struck with this branch of her manufac-

tures. Thousands of reaping machines are annually made, and they have proven to be one of the greatest benefits ever conferred upon our agricultural population, especially those on the vast western prairies, for which they are so eminently adapted. Chicago is the greatest grain and lumber market in the world; and its rapid progress seems almost like a supernatural result, it having nearly doubled its population within the last five years. From Chicago we returned rapidly by the Erie route to New York.

This excursion imparted to our mind higher ideas of our country's greatness and natural resources than we had entertained before, especially the rapid progress of its railroads—those grand avenues of our inland commerce. In a few days we passed over 1093 miles of railroad, from New York by way of Pittsburgh and Cincinnati, to St. Louis, then up to Chicago, 280 miles, thence to New York, 973 miles—forming a round of connected railway 2346 miles long.

When we look upon the rapid development of our railway systems, it is scarcely possible to over estimate the grand results which they have effected in the growth of our internal commerce and the development of our national resources. We know that along the lines of all our railroads thrifty villages have arisen as by magic, where now, but for them, there would have been only silent standing forests and untilled prairies. They have provided the means of transport between distant cities and without such agencies we know that commerce can neither flourish nor progress.

We have avoided alluding to the speeches, scenes and incidents of this public demonstration; these, with their attendant festivities, have been described by reports in the daily papers, and would not now interest our readers. We have been briefly statistical with our experience on the occasion, for the purpose of conveying a somewhat clear idea of the extent of the railway conveniences now provided for commerce and travel between the important cities and towns in our country.

In 1836, the year when Chicago was organized into a city, there were only fifteen miles of railroad in operation in New York, and not a mile in Ohio, or any of the States west of Pennsylvania. It took two weeks to reach Chicago from this city by the best methods of river, canal and lake navigation; now we can travel the same distance in two days by railroad. In that year it required a month to go from New York and back round by Chicago to St. Louis, a distance which can now be traversed in five days. Such are some of the wonders achieved in traveling by our railroads in twenty-one years.

Brick Cylinders in Sand for Bridge Piers.

About seventy miles from Madras, a bridge of fifty-six arches, each thirty feet span, has been built on the river Poiney, on the line of a new railway. The bed of the river is sand of unknown depth, and it was necessary to lay a deep artificial foundation for the piers. This was accomplished by using cylinders made of cemented brick. Each pier is founded on fourteen cylinders built of radiated brick, each five feet external diameter, and two and a half feet inside diameter. These were sunk close together to the depth of fifteen feet below the level of the river, and then filled with broken brick, and the interstices between with stone. On the top of these the masonry of gniess rock commences. This rock is quarried in the neighborhood by the action of fire, which causes it to split off in layers from three inches to three feet thick. This may be a useful hint to those who quarry this kind of rocks, so common in the neighborhood of New York.

The building of bridges in India upon brick cylinders is a very old, and is stated to be an excellent method. These cylinders are sunk in the sand as follows:—A native fixes a plumbline as a guide to the top of the cylinder, which is built on the sand, then descends inside with an instrument similar to a hoe in shape. With this he excavates the wet sand, which is drawn up with a bucket attached to a cord passing over a pulley at the top. As the sand is excavated inside the cylinder, it descends in the same manner exactly as the

iron cylinders represented on the first page of Vol. 8, SCIENTIFIC AMERICAN. A brick cylinder descends about two and a half feet in twenty-four hours, and relays of workmen are employed day and night to keep it sinking, until it has attained to its proper depth, otherwise, were the work stopped in its progress, the sand would pftck in and around it so firmly that it would cease to sink. In some situations in our country this method may be very useful for the foundations of piers, but not where good timber, such as oak, chesnut, or cedar piles can be obtained cheap, as these are just as durable as brick when entirely excluded from the atmosphere.

Live Fences.

In European countries the well-tilled fields look delightful in summer, fringed as they are with live green fences, which are kept trim and neat by being annually cropped with shears or a hedge-knife. The American manner of fencing fields with rails and boards is the reverse of the picturesque. Timber fences also commence to decay from the day they are first put up; they require frequent repairs, and do not last many years. Where timber is plenty, however, they are certainly the most convenient, for they can be put up expeditiously; but where timber is dear, our farmers should leave no experiment untried to secure the enclosing of their fields with durable live fences. Hawthorn, which is the most common fence material in Great Britain, does not stand our climate well. Trials with it have effectually proven this to be so. In Europe, live beech hedges are not uncommon, and they might answer a good purpose in our climate. They are cultivated by planting young beech trees thickly set together in rows, and afterwards keeping them trimmed close every year with large shears. Their height is generally about six feet, and the constant cropping of them makes the hedge to grow thick and impenetrable to cattle, and during summer when in full leaf, they are beautiful. The osage orange fence has been cultivated with some success in our Southern and Western States, but it is stated to be unable to withstand a colder climate further north. Locust fences have been tried in many parts, but they do not grow so thick near the roots as is required for fences.

We are not aware if ever the American hawthorn has been tried; at least, we have never seen a fence of it. It is our opinion it would make an excellent and durable live fence, if properly cultivated; and we hope our farmers will make experiments to test it for such purposes. We call their attention to it now, in order that they may gather the fruit, (called thorn apple by some and haws by others,) a small red berry, in season, and plant them in the fall. Such shrubs grow wild in many sections of the country; the spikes or thorns are large, and the branches become strong and thick. We have not the slightest doubt, that when planted and kept annually cropped, such fences would grow thick and quite impenetrable to animals.

States Weights and Measures.

The Legislature of New York, at its last session, passed a law defining the weight per bushel of certain articles as follows:—Indian corn, 58 pounds, wheat, 60, beans, 62, peas, 60, clover seed, 60, potatoes, 60, rye, 56, flax seed, 55, barley, 48, buckwheat, 48, timothy seed, 44, oats, 32.

This law is of no great account, because the question of weights and measures is one over which the United States Government alone has the constitutional control. A uniform system is what is wanted, not a zebra complication of acts by the different States, which only tend to increase commercial difficulties between them.

A United States bushel is simply a measure of capacity—2150.42 cubic inches. Ohio, Pennsylvania, Maryland and New York have laws relating to weights and measures, all agreeing as to the weight of a bushel of wheat, (60 lbs.,) but not as to corn, a bushel of which, in Philadelphia and Ohio, is 56 lbs.—two pounds less than in New York. In Ohio the weight of a bushel of oats is 32 lbs., the same in New York, and in Philadelphia

24 lbs. Is not this a harlequin system for different States under one general government? We hope the next Congress will not neglect this question.

We have looked in vain for a compliance with the above law since it was passed, by retaildealers in New York. They ignore it in a most calm and philosophical manner. We do not believe that a single person in this city sells potatoes with the least regard to their weight per bushel.

The Atlantic Cable and the Niagara.

In our last number we quoted the Liverpool (Eng.) *Albion* as authority for the statement that the *Niagara* had been examined by a committee of the Atlantic Telegraph Co., and found unfit for the duty she was sent to perform, namely, to carry and lay down part of the great ocean cable. By the late news from Europe we find that the information of the *Albion* was incorrect, at least, the London *Times* says it is, and we consider it good authority. She was to leave the Thames on the 18th for Portsmouth dockyard, where some of her staunchions were to be taken out, and her ward-room altered, to admit the cable, when this was done, she was to proceed at once to Birkenhead (opposite Liverpool) to take in her share of the cable. It appears that the ship was judged unsuitable unless these alterations were made, and this induced the report published by the *Albion*.

The consumption of fine wire for the telegraph cable has been greater than could be furnished by all the wire-drawers in England; this has delayed its completion. After the preparations are perfected, all the vessels of the squadron which are to be engaged in the undertaking are to rendezvous at Cork, on the south-west coast of Ireland, where final arrangements are to be made. The war steamer *Cyclops* is now engaged in taking soundings along the proposed sea route for the cable, which is designed to be laid in August.

Arsenic in Silk.

"In France, lately, some workmen fell sick in working on an apple-green dress. A piece of the silk was examined by a chemist, and was found to have been colored with copper and arsenic. These substances adhering but slightly to the silk, were detached in handling, in the shape of powder, and were thus inhaled in the lungs. An order was issued, prohibiting the future use of this kind of coloring matter. Many of these silks are supposed to have come to the United States."

The above paragraph we have taken from one of our exchanges in order to say that we do not believe such an event as that stated ever occurred. It describes the green silk dress as having been dyed with copper and arsenic, a process which requires the use of a strong caustic alkali, and this would destroy the luster of the silk, and give it a cottony appearance. A French dyer would take care not to do this.

Canada Railroads and the Great Eastern.

The Directors of the Grand Trunk Railway, Canada, have announced in circulars that they have entered into arrangements with the proprietors of the above leviathan steamer that it shall make its first voyage to Portland, Me., and possess a thorough booking system in connection with the railroad, for the conveyance of passengers from England to America, through Canada to the Western States.

Changes in the Patent Office.

Mr. Galphin, of the draughtsman's room, has been appointed assistant examiner to Mr. Lane, in place of Dr. Breed, resigned. We have no doubt he will make a faithful officer. Mr. Moss, who lately resigned, will leave the Office on the 1st prox., with the intention of making a journey south. He has been an efficient faithful officer, and his absence will be a loss to the Patent Office.

Great Iron Viaduct.

There is now being erected over the Jordan river, on the line of the Catasauqua and Foglesville Railroad, Pa., a viaduct wholly of iron eleven hundred feet long. When finished it will be the longest iron bridge on our continent.