Scientific American.

NEW YORK, APRIL 14, 1855.

The Canals and Railroads of New York.

We are indebted to the State Engineer—John T. Clark—for a copy of his annual report on the canals, for 1854, and find much therein to interest and instruct. The first railroad constructed in this State—it is therein stated—was the one between Albany and Schenectady, fifteen miles long, which was projected in 1826, and completed in 1830. It does not state who was the engineer of it, but we understand it was Peter Fleming, who surveyed and laid out the upper part of New York City. The progress of railroads was somewhat slow, it appears, after the first one was built, for the Central line through the State was not completed until 1843. At present we have two State lines of railroads, the Central, and the New York and Erie, and it seems they have injured the canal freight trade (a little) during the past year. In order to increase the revenue of the State, it has been proposed by the Governor to levy a tax on railroad frieght, in order to make up the deficiency of loss from canal revenues; in other words, to make the railroads pay the rent of the canal. Mr. Clark, we are glad to see, points out the absurdity and foolishness of such a proposal. It would tend to injure the commerce of New York, and divert it into other channels. We find it stated in this report, that there is a mile of canals and railroads in New York for ev-every three miles square of territory in the State. Mr. Clark advocates the early completion of the Erie canal enlargement; and in this he is right. It is a most absurd policy to have a little bit *here*, and another bit *there*, of this work completed, and not the whole of it, when all of it, as a whole, is required to be enlarged before its benefits can be experienced.

It cannot be disguised, however, that a large portion of the interior carrying trade of New York, from the great West, now goes through by the completed Pennsylvania lines of railroad; and down through Lake Ontario. Merchandise will go by the most favorable and economical routes—nothing can prevent this. The only way to increase the commerce of any country, is to increase its facilities for the cheap transport of merchandise.

The New City Hall.

We hope our city fathers will decide upon having this building constructed of cast-iron. The material is fire-proof, is stronger than marble or granite, and will endure for thousands of years. It is also capable, in any edifice, of being ornamented in the most elaborate manner, at a very small expense. We look upon cast-iron in its application to architecture as one of the grandest discoveries of this iron, steam, and lightning age. Tasteful ornament is *beautiful*, independent of its cost, be it cheap or expensive. If then a building can be erected of cast-iron, and ornamented with the finest architectural designs for one tithe the expense for which it could be executed with carved stone, it should be a strong inducement to its general use in buildings; its adoption certainly tends to elevate the public taste. The blockading of the streets of New York with piles of brick and mortar for new buildings, is a perfect nuisance. All this is avoided by the use of cast-iron. The several parts or castings of iron structures can be put up so rapidly that the public is never disturbed by street obstructions attending their erection. Several of the cast-iron buildings recently erected in our city are a credit to it, more especially the new one of the Messrs. Harpers, the publishers, in Pearl street. It is not quite completed yet, but even as it is, it is worth going a thousand miles to see, and when fully completed we shall have something more to say about it.

As cast iron has recently fallen in price, the New City Hall can be built of this material for at least twenty thousand dollars less than it could have been two years ago.

Curious Electrical Phenomena.

The Eaton *Democrat* (Mich.) of the 26th ult., has come to us marked around, the letter of a correspondent, who describes a peculiar phenomenon which he witnessed during a snowstorm on the 11th of last month, at about half-past eight o'clock in the evening, when at the house of his brother in Tuscola, Livingston County. His brother, while crossing the street, beheld streams of light like electricity issuing from his fingers, and on attempting to brush them off, they began to issue from his clothes and his hair. He then called upon the writer to come out and see it, who did so, and found himself also enveloped in light, when he approached him; he was literally covered with small flames, resembling a multitude of minute candles. He says: "We stood in the middle of the street, the storm pelting us in its coldest fury, the night as dark as Egypt, and we presenting the imposing appearance of lamp-posts illuminated by a hundred burning tapers.

One characteristic of the phenomenon was rather singular. Although we were nearly all in a blaze, or at least nearly covered with a multitude of small blazes, yet they did not reflect the least light, nor were they in the least affected by the wind. We called the family out to see the sight, and the lights immediately appeared on them, but in a far less degree of brilliancy than they did on us. The appearance was beautiful indeed, and with its soft, gentle, phosphorescent flickering, contrasted beautifully with the thick darkness of the night, and the hoarse moaning of the elements lashed into fury by the madness of the storm."

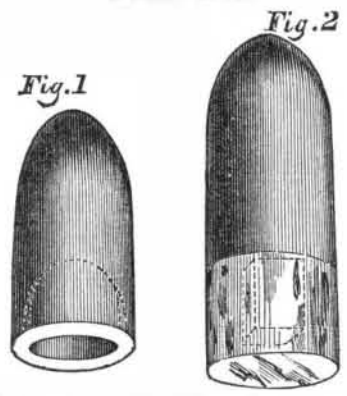
This is the second notice of a like phenomenon observed during the past winter.—The other case is that related by H. Ware, of Cambridge, Mass., in a letter to Prof. Silliman, and published on page 273, last number of Silliman's *Journal*. The night on which it was witnessed was the 17th December last, while he was walking along the long bridge between Boston and Cambridge. His attention was attracted to the iron lamp posts on the bridge by a loud hissing noise, and by several sharp pricks on his forehead, and on raising his hand to remove his felt hat, he beheld a brilliant discharge of electric sparks when his fingers touched its rim. He then looked to the lamp posts, and saw long streams of electric light streaming out from every point of them, although the lamps were not lighted. This was during a snow storm, and the wind blowing very strong, as was the case at Eaton.

Guano.

It is only fifteen years since guano was first used in Europe, and since 1840, when only a few tuns were used by way of experiment, its consumption has increased up to nearly 100,000 tuns per annum. In our own country the demands for it were so numerous last year that they could not be supplied. From the great and insatiable demand for this manure it has been subject to the most glaring adulterations by mixing it with loam of the same color as the guano itself. Farmers should therefore purchase it of respectable and well-known dealers. The best quality of this fertilizer is the Peruvian. From the large amount of ammonia and phosphates contained in this kind of guano, together with the almost inexhaustible supply, and the circumstances attending its origin, collection, and importation, the farmer can more implicitly rely upon it for fertilizing his fields than on any other. Being the production of a climate where rain seldom or never falls, its composition becomes less altered, and its character less varied, except in color, than those varieties found further north or south.

Guano, like farm-yard manure, may be applied with advantage to almost any kind of soil, as well as to most of our cultivated crops, as it contains every element necessary to their growth, independent of the quality of the soil—one great point being attended to—that the land be in good tilth; for otherwise, the tender roots of the vegetables would meet with obstruction, and become crippled in their growth. Poor well-tilled soils receive the most advantage from this fertilizer, as they are most generally deficient in some essentials necessary to the growth and perfection of plants, which guano supplies.

New Rifle Bullets.



The annexed figures represent two new bullets for rifles. Figure 1 is a bullet with a hollow chamber in its butt, to make the charge of powder expand it and fill up the grooves in a rifle; figure 2 is a bullet with a *sabot* or shoe of cork, on its butt, for a rifled cannon. Figure 1 is a view taken from a figure in the account of Lieut. Col. Beamish of the experiments of Capt. Norton (of Cork, Ireland) with projectiles. Figure 2 is taken from a model ball sent us by Capt. N. himself, who says it is also well adapted for Sharp's breech-loading rifle. The chambered bullet is designed to supersede the Minie ball for quick loading from the muzzle. Figure 2 is cast with a square shoulder on its butt (see dotted lines) and over this is secured the *sabot* of cork. This cork *sabot* will expand with the charge, and fill the grooves of the rifle, preventing windage, and and at the same time give the ball a spinning motion on its horizontal axis. It appears to us to be a more simple and better bullet for long use than the Minie ball. Capt. Norton has also used bolts for cannon like those of the old Genoese cross-bows, only his *sabot* was of lead secured on the end, by which means a cast-iron bolt can be made to fit into a rifled cannon, and receive a spinning motion by the lead being forced into the grooves, thus avoiding the dangerous grinding action by the cast-iron bullets in the spiral grooves of the Lancaster gun. On our claim page, this week, it will be noticed that a patent has been granted to Luther Houghton, of Philadelphia, for an improvement in loading rifled cannon, in which the *sabot* is mentioned. Our readers will understand what this means by our illustration. With a *sabot*, a conical cast-iron bullet might be used in a common rifle, and it would be able to pierce through a plate of pretty thick iron. Capt. Norton in his experiments found this to be the case. We have no doubt but a conical bullet with a lead *sabot* may be safely used in a rifled cannon, and with excellent effect. A few weeks since J. W. Cochrane, of this city, whose crushing machine was published on page 364, Vol. 7, SCIENTIFIC AMERICAN, exhibited to us some peculiarly formed bullets with hollow spiralled butts, which had been experimented with in the common plain bored muskets, and which gave them the quality of the rifle, by the spinning motion given to the ball. The same effect was produced on such shot—we were assured—in a plain bored cannon, with his cast-iron bullet. If the same character of motion as that given to a ball by a rifle can be given to a bullet—owing to its peculiar form—in a plain bored barrel, the invention must be of great importance, as it will enable the smooth bored musket, which can be bored at much less expense than a rifle, to rival that peerless arms, for correct shooting. We have not witnessed any of the experiments ourselves, but we have been given to understand that some successful experiments have been made at Washington.

Boston Water.

We have received the Report of the Cochituate Water Board, of Boston, for 1854, in which it is stated—and we are very glad to hear of it—that the offensive taste of the water has entirely disappeared. The improvement in the taste, however, was longer in taking place than was expected. It commenced about the first of January, and went on increasing until February, at which period the water at the lake had acquired its former purity. In this Report Prof. Horsford has added to his previous one and has done so in a candid and creditable manner. Some difference of opinion has been expressed by the scientific men of Boston on this subject. We incline to the opinion that Dr. Hays has discovered the true cause—aquatic crustacea—but aquatic vegetable organisms, no doubt, as stated by Prof. Horsford, prevailed to a great extent last year, owing to the long and severe drought, and Dr. Jackson's chemical analysis is also proof positive of this. The people of Boston must not relax their efforts to prevent the evil occurring again.

To Inventors Only—Models.

Almost daily we are in receipt of models on which the inventors have omitted to place their names. It is very annoying to us to have our shelves and counters filled with models which we are often unable to decypher the use of, or know whom to address for information concerning them, and we do wish inventors would be more regardful of our feelings, and at the same time their own interests, by placing their names and place of residence upon some part of every model they send to us. Inventors should not think that because they have recently written us that they had invented a machine for such and such a purpose, and got a reply, that if they would send a model we could decide upon its merits and patentability better than from their description, when the model comes we should remember *who* wrote about it. We care not how many models are sent us for examination—the more the better—but don't forget to put the inventors' names upon them, and withal never forget to pre-pay the express charge, or otherwise provide for its payment by remitting the probable expense, by mail. There are a number of *nameless* models which have come to this office within a week, which the inventors no doubt are looking for an acknowledgement of through the columns of this week's paper, and no doubt will write us in a petulant manner, inquiring why they have not heard from their models which were sent to us a week or two ago. Gentlemen, bear this in mind—"place your names upon your models, accompanied with descriptions, (if not previously sent) pre-pay express charges, and your requests shall be promptly attended to."

Provision and Fruit Preservation.

John C. Schooley, of Cincinnati, Ohio, obtained a patent on the 13th of last month, entitled a new process of curing meat. The object of this invention is the maintaining of a dry atmosphere in summer, in an apartment cooled by ice, so as to enable him to cure pork, beef, &c., during the summer as well as during the winter months. He has ascertained, he informs us, by actual experiment on a large scale, that hogs and beef cattle can be killed, and the meat cured in summer, with nearly equal success as in the best winter weather. His plan is, to pass the air for his building over the surface of ice, which thus reduces its temperature, and makes it deposit its moisture before it enters the curing room. He commenced operations in April, last year, and cured $15,000 worth of pork, hams and shoulders, with only a loss of about seven per cent. The temperature in the curing room ranged at from 39° to 48°, when it was from 90° to 95° in the shade outside. The chamber was entirely free from moisture and impure air, whilst in all other places heretofore used for summer curing, the curing chamber was always dripping with drops of water hanging to the ceiling or running down the sides of the apartment, creating an impure atmosphere, and the result of curing in this moist air was disastrous, showing a loss in spoiled meat of not less than 20 to 40 per cent., or even amounting to 60 per cent., which has heretofore prevented the summer curing process from being of any commercial value.

His plan is now in full operation at No. 359 Plum street, Cincinnati, where it may be examined by all those interested in the preserving of both meats and fruits.

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