

SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XXI.—No. 17.
[NEW SERIES.]

NEW YORK, OCTOBER 23, 1869.

{ \$3 Per Annum,
[IN ADVANCE.]

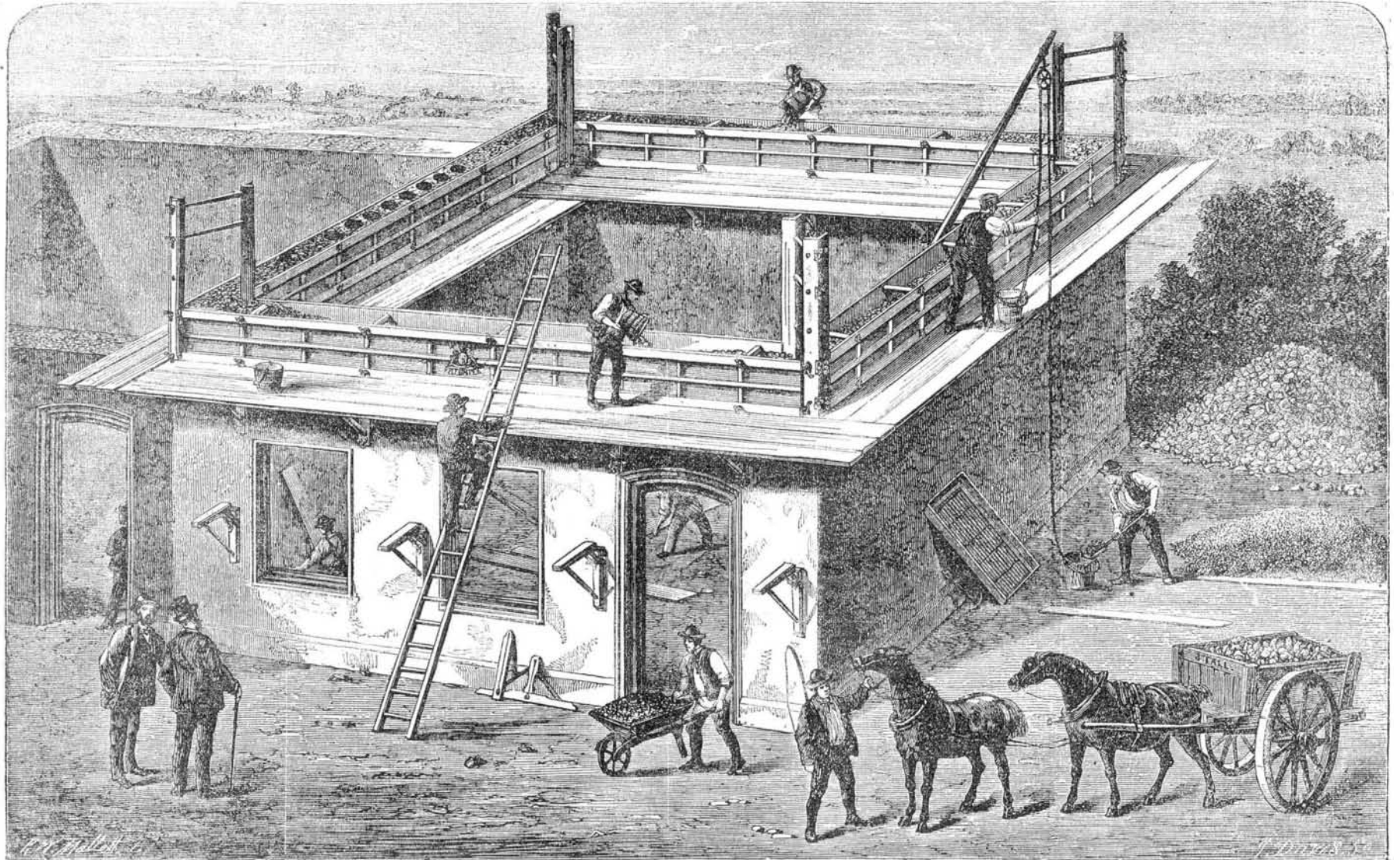
CONCRETE BUILDING.

Much interest has been taken throughout many sections of the country in the subject of concrete building. We have several times given outlines of the processes employed, and have discussed the merits of the method to some extent. Our readers will have gathered from what we have already

dumped out of a cart, until the entire heap has been wetted and mixed together. It is then put in iron or zinc pails, and poured into the frame, where it is leveled by men stationed for the purpose. In order to save concrete, large lumps of stones or brickbats are put into the center of the wall, and covered over and about with concrete. Frost does not affect the concrete after it has once set, which, with good cement,

quality, seems to be the thorough mixture of the dry materials, to secure uniform strength, the whole process is extremely simple, and by the aid of our illustration cannot fail to be readily comprehended.

We are informed that some dwellings of this character are soon to be erected by Mr. Charles Kamlah, at Rutger Park, Belleville, N. J., on ground purchased by the New York Co-



MODE OF CONSTRUCTING CONCRETE BUILDINGS.

said that we regard the method with considerable favor, and though doubtless in this, as in all attempts at improvement, there will be more or less failure at first, it is evident that this mode of building is growing in favor, both in this country and in Europe. The annexed engraving, from the *Irish Farmers' Gazette*, gives a most excellent idea of the manner in which the system known in England as Tall's system of constructing walls, houses, etc., in Portland cement concrete is conducted.

This system has been used in the construction of a large number of houses in Paris, erected under the directions of the Emperor, who takes great interest in the improvement of the dwellings of the working classes, and has also been applied in other parts of Europe, and to some extent in the United States.

The work can be performed by ordinary laborers, who, after a four or five day's experience, acquire all the requisite expertness. Even boys have been successfully employed in this kind of building. The only skilled workman necessary is a common carpenter, whose duty is to adjust the frame-work or apparatus to receive the successive courses of material, and place joists, doors, and window-frames properly.

The apparatus is designed to construct 18 inches in height daily over the entire extent in hand. What is done in the evening of one day is hard next morning, and quite strong, the best proof of which is, that the wall itself, as it rises in height, supports the necessary scaffolds, as shown in the accompanying engraving. A double curb entirely surrounding the upper part of the walls, serves to hold the plastic material in place, until it acquires sufficient hardness to support itself.

The material consists of one part of Portland cement to eight parts of coarse gravel. The cement and gravel are first well mixed together in a dry state, and when this is done, it is damped by means of a large watering pot, and again mixed by a pronged drag such as is used for dragging

will be in about five or six hours. Nor do heavy rains appear to injure it in the slightest degree, though they may chance to fall ere the concrete has hardened. The walls can be made straight and even as it is possible for walls to be, and the corners as sharp and neat as if they had been formed of the most carefully dressed stone.

Concrete makes excellent floors, and the walls and floors are quite impervious to vermin of all kinds, and also to wet. Many kinds of building bricks will absorb water; hence brick houses, when the walls are saturated with water, are cold. This is not the case with houses constructed of concrete, as it is non-absorbent of moisture, and such houses must be, therefore, more healthy.

This novel mode of building homes has excited great interest in the neighborhood of Runnamoat, Ireland, and the proceedings have daily attracted numbers of people from all parts.

While concrete may be used in constructing buildings of every description, it is peculiarly adapted, from its cheapness, for the construction of cottages for laborers, and also for farm buildings. Its cost is not more than half that of brick-work; almost any material can be used along with the cement, and as we have already shown, the most ordinary class of country laborers are quite competent to carry out the details of the system. With reference to its adaptability for large buildings, we may mention that a warehouse 70 feet long, 50 feet wide, and 60 feet high, five stories in all, has been erected on Mr. Tall's system for Mr. H. Goodwin, Great Guildford street, Southwark, England, and that gentleman testifies in the warmest terms to its satisfactory character, and is making arrangements at the present time for the construction of another similar building. The warehouse already erected has attracted universal admiration from the practical and scientific gentlemen who witnessed its erection.

The chief element of success, when the cement is of good

operative Building Lot Association, a short distance from New York, on the Newark and Paterson branch of the New York and Erie Railway.

BALLOON MAKING.

From Once a Week.

The great Captive Balloon, which has for some months past been exhibited at Ashburham Park, near Chelsea, has been removed from London—to the sea side, we hear—and having availed ourselves of a tolerably clear day, for making an ascent in it, during the last week of its stay, we propose to furnish our readers with an account of our aerial journey; and further, to exhibit the progress of aeronautic science, by prefacing our account of M. Giffard's balloon, with a few words about the first aerial machines that were seen in this country and in France. We have lately received from San Francisco accounts of a machine combining the qualities of a balloon and a ship, which is propelled by steam, and is said to be easily steered in any direction at the pleasure of the man at the wheel. If so, the great problem of aerial navigation has at last been solved, but until we see the aerial ship successfully brought into port, we shall not be inclined to believe the stories circulated by the San Francisco journals.

Since the days when Daedalus and Icarus made their fabled flight over the Aegean, on wings fastened on their shoulders with wax, down to the present time, the construction of a machine, as fitted for navigating the air as a ship is for sailing on the sea, has been a task essayed by many men of scientific pursuits and mechanical ingenuity, and their efforts, as everybody knows, have hitherto been anything but successful; indeed, the history of aeronautic science is a story of failures. The first inventor of a balloon discovered the practicability of ascending into the atmosphere, and the latest professors of aerial navigation have been able to show us but little more. A good deal of interest attaches to the early balloon ascents; the Montgolfiers were the first persons who constructed a bal-