April 11, 1843.

JOSHUA FIELD, V.P., in the Chair.

No. 575. Appendix.* "Description of a cast-iron Reservoir erected at Garnet Hill, by the Glasgow Water-works Company."
By D. Mackain, M. Inst. C.E.

A considerable extension of the city of Glasgow is now taking place Cast-iron
Reservoir. to the north-west of the old town upon an elevation of upwards of 100 feet above the river; the water-works, which are situated to the east of the city, are already upwards of 4 miles distant from the extreme point of delivery, which is almost daily becoming more remote, and the cost of the supply of water is consequently increased. These circumstances rendered necessary the establishment of a new reservoir, which should be sufficiently high and capacious to command and to supply the district. The ground which was obtained for this purpose was on the declivity of Garnet Hill, and had a fall of 20 feet in 90 feet extent. It was necessary to keep the bottom up as high as possible and yet not to contract the space by thick walls, and to erect such a building as should not be offensive to the neighbourhood; these considerations induced the author to recommend the use of iron plates for the reservoir, which should be masked by a screen of masonry designed by Mr. James Smith, architect of Glasgow.

The construction is thus described. A bearing wall of 4 feet 6 inches in thickness was carried up from the foundation all round to within 1 foot of the floor of the reservoir. A division wall was built across the centre to carry the partition for dividing the reservoir into two parts. The space within these walls was filled in with broken stones, over which was a layer of clay, and then a layer of sand, upon which was placed a flooring of Arbroath pavement well jointed with cement, and resting at the sides upon the flanches of the sole plates, which were bedded in a mixture of lime and Roman cement, in such proportions as afforded ample time for the adjustment to be completed. The lower tier of plates was 1 inch, and the upper tier $1\frac{1}{8}$ inch in thickness. Their flanch joints were made secure by inserting between the faces a lead pipe $\frac{3}{8}$ inch diameter, filled with lint-gasket soaked in red lead and tallow, in addition to which the whole was caulked with a composition of hot lime and linseed oil, which in a short time became very hard.

* This paper formed an appendix to No. 575, "On the Supply of Water to Glasgow."

The reservoir is 123 feet long by 85 feet 6 inches wide, and 13 feet 2 inches in depth; it is entirely covered by a malleable iron roof supported upon cast iron pillars.

The paper is illustrated by two drawings and four lithographs, giving the dimensions of every part of the work, and by a specification of the mode of execution.

Mr. J.
Simpson.

Mr. Simpson said that he had examined the reservoir very carefully, and could bear testimony of the excellent manner in which the work was done. The mode of construction was novel, and had succeeded perfectly, as no leakage had occurred since its erection, nor had any inconvenience arisen from the variations of temperature, or from the unequal depths of water in the two compartments. He thought Mr. Mackain was entitled to much credit.

Coradino
Tank at
Malta.

A drawing of the Coradino Tank, erected in 1841-2, in the island of Malta, was presented by William Lamb Arrowsmith, Assoc. C.E. (Superintendent of Government Works at Malta.)

It was described as the largest modern covered tank in Europe: its cubic contents being 700,000 feet; and with its settling reservoir it would contain 15,000 tons of water; the roof was supported by rows of square pillars 15 feet in height. It was intended to form a part of the works for supplying the island with water, a description of which was promised to the Institution to complete the paper on the supplies of water for cities, the first part of which has already been received.

Artesian
Well at the
"Abbateire
de Gre-
nelle."

A letter was read from the late Sir John Robison, giving a short account of the Artesian Well at the Abbatoire de Grenelle, Paris.

The Abbatoire being at too high a level to obtain an adequate supply of water by the ordinary means, it was proposed, about eight years since, to sink an artesian well within the premises, which proposal having been agreed to, the execution of it was intrusted to Monsieur Mulot. The work having been perseveringly carried forward through many difficulties, the boring was terminated by the auger penetrating the water-bearing strata on the 26th February, 1841, when a sudden and violent rush of water occurred, overflowing at the surface of the ground.

As the boring progressed tubes of rolled iron, and subsequently of copper, were inserted to support the sides, the first being $12\frac{1}{4}$ inches diameter, and the lowest about $6\frac{1}{2}$ inches diameter, reaching to a depth of $1794\frac{1}{2}$ English feet. The quantity of water thrown up while