

man of high principles and of great simplicity of life, and these qualities were united to an attractive manner and unselfishness of character which greatly endeared him to all who knew him. He was elected an Associate Member on the 6th May, 1890.

JAMES ANDREWS was born in Dumfries on the 10th October, 1827. When still a youth he emigrated to the United States, where his first employment was as a bricklayer and stonemason. So far back as 1846, though not twenty years of age, he secured the contract for the erection of the old post office building at Pittsburgh, and the bold and successful manner in which he carried out the work at once established his reputation as a contractor. In early life he constructed many of the tunnels on the Pittsburgh and St. Louis Railway, as well as the masonry for the bridge over the Ohio river at Steubenville on the line of that railway. His skill in carrying out large undertakings led to his association with the work of building the great bridge over the Mississippi at St. Louis, of which Mr. James B. Eads¹ was the Chief Engineer. As the contractor of all the masonry of the bridge, its approaches, and nearly all the work on the tunnel, Mr. Andrews justified the great confidence reposed in him by Mr. Eads.² The tunnel in question is about a mile in length under the most populous part of the City of St. Louis, and is used by several different lines of railway. The sudden changes in the river bed at St. Louis made it necessary to go to the bed rock for the foundations of the piers of the bridge. The base of one pier is 136 feet below high water, and it was sunk through 90 feet of sand and gravel; another is 130 feet below high water, and it went through 80 feet of sand. The piers are massive structures, one of them weighing 45,000 tons.³

The St. Louis Bridge was scarcely completed when Mr. Andrews undertook, for Mr. Eads, a still more important work—the construction of the jetties at the mouth of the Mississippi. Mr. Eads had long urged, in the face of great opposition, the improvement of rivers, and particularly the opening of the mouth of the

¹ Minutes of Proceedings Inst. C.E., vol. xc. p. 425.

² See C. M. Woodward's "A History of the St. Louis Bridge," p. 60. St. Louis, 1881.

³ Minutes of Proceedings Inst. C.E., vol. xc. p. 429.

Mississippi, where the sand-bars lying at the embouchure of the passes into the Gulf of Mexico had become a serious obstruction to the commerce between the Mississippi Valley and the ocean. The work was commenced in the summer of 1875, and the construction lasted about four years, the channel demanded by the contract with the Government having been obtained in July, 1879. Its dimensions were: depth, 26 feet, with a width of 200 feet at that depth, and a central depth of 30 feet, without regard to width.

Mr. Andrews took an active part in the purchase of the Moorhead and McClean furnaces and ironworks and the re-modelling of them into the Pittsburgh Steel and Iron Company, of which he acted as President. In 1894 he was appointed, by the United States Circuit Court, one of the Commissioners to fix the value of the waterworks of Kansas City, Missouri, as a basis upon which the city should take the works from a private company. He died at his residence, Ingleside, Nunnery Hill, Allegheny, on the 5th July, 1897. Mr. Andrews was in many respects a remarkable man, and the prominent position he attained was the result of untiring energy and great shrewdness. He was essentially a self-made man, and his reputation was founded on the substantial basis of experience and unremitting toil. He was elected an Associate on the 4th March, 1884.

SIR HENRY DOULTON, whose name will remain identified with the production and development of artistic pottery in this country, died at his house, 10 Queen's Gate Gardens, on the 17th November, 1897. The second son of Mr. John Doulton, a Lambeth potter, he was born in Vauxhall on the 25th July, 1820. Five years earlier his father had established at Vauxhall Walk, Lambeth, in conjunction with Mr. J. Watts, a small pottery with two kilns. He had to work very hard, and would often make 200 2-gallon bottles in a day. After canvassing for orders and collecting money in the morning, he would frequently make a quantity of 5-gallon cans, or other goods, in the afternoon. In 1834 Messrs. Doulton and Watts removed to High Street, Lambeth. The factory was small, with but one kiln, and the staff consisted of about a dozen persons. At the age of thirteen the subject of this notice was sent to University College School, where he remained two years. When the time came to decide what his calling in life should be, his parents wished him to study