

graduating instruments, and by his self-acting circular dividing engine, he reduced the labour of weeks to that of a few hours. He communicated to the Royal Astronomical Society, of which he became a Fellow in 1831, a detailed account of this instrument, (with which the above transit circle, and the zenith sector of the Ordnance Survey were graduated,) which was published in their Memoirs.¹ He took part in the experiments for determining the true imperial standard yard, and also in its construction. In 1852, he was elected a Fellow of the Royal Society.

He died at his residence, Carshalton, Surrey, on the 21st of June, 1860, in the sixty-seventh year of his age, highly esteemed for the quiet courtesy and the truthful disposition which he had ever displayed throughout his life.

MR. ARCHIBALD SLATE was born in East Lothian in 1815, and received his education at the High School, Edinburgh. At about the age of eighteen, he became a pupil at the works of Messrs. Claude Girdwood, and Co., Mechanical Engineers, of Glasgow, of which firm Mr. Charles Atherton, (M. Inst. C.E.,) was at that time the managing partner. Young Slate was so remarkable for his rapid progress in the acquisition of knowledge, and for practical ability in his profession, that he was employed, while still a pupil, in the erection of machinery, in Ireland and elsewhere. On coming to London, he was engaged by Messrs. Bramah and Robinson, of Pimlico. He was, subsequently, intrusted with the management of the Holly Hall Foundry at Dudley, and became the Resident Engineer for the machinery of the mines and furnaces on the estate of Lord Ward, the present Earl of Dudley. On returning to London, he entered the establishment of Messrs. W. Simpson and Co. of Pimlico, and for some time had the management of those works. In 1845, he undertook the erection and organisation of the extensive works of the Birmingham Patent Tube Company, at Smethwick, which he successfully accomplished, and also introduced many improvements into this important branch of manufacture. He then joined the firm of Messrs. Cochrane and Co. of the Woodside Iron Works, Dudley, as partner in the foundry department, of which he assumed the management, and by his labours, contributed essentially to the great improvements that have been there effected, in the manufacture of cast-iron pipes. He was also the originator of several patents, among which was one for the now well-known, and generally used, blast engine, to which his name is attached. He,

¹ *Vide* "Memoirs of the Royal Astronomical Society." Vol. xv., p. 83.

subsequently, took an active part in establishing Messrs. Cochrane and Co.'s new Iron Works and Foundries, at Middlesborough on Tees. The effective aid afforded by the firm of Cochrane and Co. to the construction of the building for the International Exhibition of 1851 was, in a great degree, due to the energy of Mr. Slate, who was a worthy exponent of the great plans of his friends and partners, Mr. Charles Geach and Mr. A. B. Cochrane, (Assoc. Inst. C.E.,) without whose co-operation that building would probably not have been completed in the short period allowed for its erection. After several years of close attention to business, he retired from his connection with that firm, with his health considerably impaired. Unfortunately, he never entirely recovered, and after a long and painful illness he died on the 1st of January, 1860, at the early age of forty-five years.

Mr. Slate was one of the founders of the Institution of Mechanical Engineers, of Birmingham, and for some years he was a very constant attendant at the Meetings, and took a prominent part in the proceedings. He joined the Institution of Civil Engineers as an Associate in 1844, and when he was in London he attended the Meetings assiduously, taking part in the discussions with his usual energy whenever the subjects were analogous to his pursuits. He was distinguished by great originality of ideas, at times almost amounting to excess of enthusiasm, but his energy and practical skill enabled him almost to command success, under circumstances that would have appalled other men. He was entirely unselfish in his views and utterly fearless in the expression of his opinions, as was witnessed by the Institution when, at the Annual General Meeting, in 1855, he denounced what he conceived to be wrong, and carried conviction to the minds of all present, for the great good of the Society. He was elected one of the Associate Members of Council for the Session 1858-59, but the impaired state of his health did not permit of his attending to the duties of the office.

He was highly esteemed by a large circle of friends, by whom his long illness and premature decease were deeply deplored.