

in his fifty-second year ; and when his remains were consigned to the tomb, in Highgate Cemetery, they were met by a large number of his professional brethren, who had spontaneously resolved thus to demonstrate their sense of the public and private virtues of their deceased friend, and by the erection of a monument, to exhibit their heartfelt sympathy for the premature loss of so good and talented a man.

He was not an old member of the Institution, having only been elected in 1845, and his engagements, being chiefly in the country, precluded his giving much personal attendance at the meetings, but he took part in some discussions in so able a manner as to cause regret that he could not more frequently be present.

MR. THOMAS GRAINGER, of Craig Park, Mid-Lothian, was born on the 12th of November 1794, at a farm, then tenanted by his father, at Gogar Green, Ratho, near Edinburgh, and in the classes of the University of that city his education was completed.

At sixteen years of age he entered the office of Mr. John Leslie, who enjoyed some reputation, at Edinburgh, as a Land Surveyor, and on quitting that position, after six years of active labour, he commenced business on his own account in 1816, as a Civil Engineer and Surveyor, and soon obtained considerable employment in laying out and improving public roads.

About the year 1823, when railways, as means of conveyance, were first brought before the public, Mr. Grainger conceived a very just view of their probable importance, and strongly advocated their adoption, chiefly for the purposes of the mineral districts ; this probably influenced the survey of the Monkland and Kirkintilloch railway being confided to him, and when, in 1824, the Act of Parliament had been procured, the execution of the line was intrusted to him. This railway is stated to have been the first, in Scotland, on which ' edge rails ' were used, and it proved to be so good an investment, that it induced the construction in the same district, of the Ballochney, and the Glasgow and Garnkirk lines, in 1826, and of the Wishaw and Coltness railway in 1829.

In the year 1825, Mr. Grainger entered into partnership with Mr. Miller (M. Inst. C. E.), and the engineering works were executed, under their joint superintendence. The success of the Liverpool and Manchester line gave a fresh impetus to railway speculation, which extended to Scotland, and induced in 1830 the proposition for a line between Edinburgh and Glasgow, for which Messrs. Grainger and Miller acted as joint Engineers; the application to Parliament was not however successful, and soon afterwards, although they continued in partnership, it was arranged, that so far as Engineering was concerned each should execute his own works.

In 1834 Mr. Grainger executed the Paisley and Renfrew railway, and in 1835, the Arbroath and Forfar line; he laid out the Glasgow and Greenock railway in 1836, but ceased to be connected with it after the passing of the Act for its construction. In that year he also laid out and subsequently executed, the Edinburgh, Leith and Newhaven line, and projected a harbour at Trinity, between Leith and Granton, which aided in determining His Grace the Duke of Buccleuch, to the execution of his great undertaking, the new harbour at Granton, for which Mr. Walker (M. Inst. C. E.) was the Engineer.

The connexion with Mr. Miller was dissolved in 1845, and in the busy period which immediately followed, Mr. Grainger was occupied upon many enterprises in Scotland, among which may be mentioned, the Edinburgh and Bathgate, and the Edinburgh, Perth and Dundee railways, in connexion with which latter, he designed and executed the harbours at Broughty Ferry, and at Ferry-Port-on-Craig, where for facilitating the transport of the railway traffic across the Tay, he contrived a steam barge to receive on its deck a train of waggons, for the loading and unloading of which some very ingenious plans were adopted, which were described in a paper read before the Royal Scottish Society of Arts, in 1848.

In England also, Mr. Grainger had considerable employment, chiefly on the Leeds, Dewsbury and Manchester, on the East and West Yorkshire Junction, and the Leeds Northern railways, on the latter of which were some considerable works, such as the Morley and the Bramhope Tunnels, and the Wharfe Viaduct, the latter consisting of twenty-one segmental arches, each 60 feet span, built on a curve of 2,500 feet radius, crossing

the river at a very considerable height, and forming an important feature amidst the surrounding beautiful scenery.

In this brief sketch, only the principal works in which he was engaged have been mentioned, but enough has been stated to show the position he held in the profession, and the selection of him to fill the Chair of the Royal Scottish Society of Arts, for two successive years, and the deference paid to his views, by his coadjutors, in the Town Council of Edinburgh, of which he was a member, mark the general estimation in which he was held. For the former body, he was strenuous in his efforts to extend its utility, and set an excellent example to the members of that and other societies, by making a journey to Holland, for the express purpose of drawing up an account, from personal inspection, of the draining operations at Haarlem Meer, to be read during the first year of his Presidency.

He distinguished himself as a useful citizen of Edinburgh, devoting, in his latter years, much of his time to the affairs of the city, with great benefit to the community.

He possessed strong common sense, great perseverance and determination of purpose, combined with simplicity of mind, and in the social and domestic relations of life, he was most amiable and exemplary. At his decease, which occurred in his fifty-eighth year, on the 25th of July 1852, in consequence of injuries received in a collision of trains, at the junction of the Clarence, with the Leeds Northern Railway, near Stockton-on-Tees, he was regretted as a firm friend, a kind master, and a sincere, consistent Christian.

He joined the Institution as a Member, in the year 1829, was constant in his attendance at the meetings, whenever he visited the Metropolis, and studiously advanced the interest of the Society by every means in his power.

MR. WALTER HUNTER was born in the parish of Newbattle, near Edinburgh, in the year 1772, and from his father, who was a "wright," combining the trade of a carpenter with the construction of the rude agricultural machinery of that period, he learned the first rudiments of the craft, in which he subsequently became a greater proficient, whilst in the employment of Messrs. Moodie, of Leith-walk, who had then a considerable business as millwrights. By that firm he was
[1852-53.]