OBITUARY.

GEORGE FREDERICK ARMSTRONG, eldest son of the late Mr. George Armstrong, of Doncaster, was born there on the 15th May, 1842. His education began under private direction, and during the latter portion of this early period of his life study was alternated with intervals of work in the locomotive sheds and repairing shops of the Great Northern Railway at Doncaster. When he had reached the age of seventeen, it was deemed expedient that he should proceed with his education at one of the few colleges which then in some degree specially provided for the necessities of the engineering student. Entering King's College, London, at the beginning of the session 1857-58 he commenced, and in three years completed a course of scientific and professional study entitled to be described as comprehensive even in the changed circumstances of the present day with regard to engineering education. From King's College, London, he migrated first to St. John's College, and immediately afterwards to Jesus College, Cambridge, whence he graduated B.A. in 1864, and proceeded to M.A. in due course.

On leaving the University in 1863, he returned to the Great Northern Railway as a pupil under Mr. Richard Johnson, then Engineer-in-chief, on whose staff he subsequently served in the capacity of an assistant engineer. His connection with the Great Northern Railway finally terminated in 1869, but not before he had been once more back to work in Doncaster at the company's locomotive works.

Towards the end of the year just mentioned, he took chambers in London, designing to undertake such work as came to hand; and considering the short space of time during which this phase of his professional life extended, he was singularly successful in establishing a connection. His principal engagement was with the promoters of the Isle of Man Railways, for whom he first prepared in general outline, and subsequently in some detail, the schemes which were ultimately carried into effect.

The Dominion of Canada, never indifferent to its responsibilities with regard to education, was about this time beginning to command the means with which to establish and maintain a thorough system of teaching science as applied to the industrial arts and engineering. In 1871 a Chair of Engineering was founded in
McGill University, Montreal, and Mr. Armstrong was chosen to be the first professor. There was much work to be done, and he did it. Beyond his tasks of daily duty, he had to compass the organization of his own entirely new department both in respect to its internal working and to its relations with other old and new departments; and the schemes of study and regulations for graduation called for careful thought in preparation, constant watchfulness in development, and steady piloting into action. Still, he somehow found time to take part in the life of the University and the city. His striking personality was in evidence on all occasions when the interests of the University and its relations to engineering were concerned; and he was ever ready to bear the burdens of private or public responsibility which he conceived in the remotest degree attached to the office he held. Professor Armstrong was a keenly efficient member of the University Militia Corps; and not long before his death he expressed his deep satisfaction with Canada's magnificent response to the recent call to arms, and that men of his old regiment had won for themselves and their corps remarkable distinction, and had helped in establishing traditions imperishable alike in Canada and in the Empire at large. He occupied this post for five years, sharing the work, anxieties, and hopes of those who at that transition period laboured to secure for McGill University the power of effective action and the proud position it now holds.

Professor Armstrong, though of Scottish descent, was a Yorkshireman by birth, predilection, and marriage ties; and when, in 1876, the Chair of Engineering in the then recently founded Yorkshire College at Leeds was established, he accepted the appointment of first Professor of Engineering, which post he held for about five years.

In 1885 Professor Armstrong was appointed successor of the late Professor Fleeming Jenkin in the Chair of Engineering at the University of Edinburgh, and in due time, as is the custom at the Scottish Universities, the new Professor delivered his inaugural address entitled "The Progress of Technical Education at Home and Abroad." The delivery of the address in balanced periods was a fine performance; the width of view exhibited was no less remarkable than the cogency of the arguments employed to stimulate national effort, and where immediate action and reform were urged, he was definite and practical. That address, now sixteen years old, is still interesting and suggestive reading; and the fact that it carried beyond the audience, which included the foremost members of the profession resident in Edinburgh, is not surprising. A paragraph was quoted in debate by Sir Stafford
Northcote, the then leader of the House of Commons, and another paragraph attracted the attention of a wealthy brewer, who, dying shortly afterwards, bequeathed a substantial sum of money for the purpose of founding a mechanical laboratory in the University, to be called after the donor—the Fulton Laboratory. Many difficulties with regard to securing a habitation were encountered, but these being overcome by tact and patience, the laboratory was ultimately housed in the University Old Buildings.

Like his predecessor, Professor Armstrong was a worker in the field of public health; and among the first of the many new arrangements inaugurated on his advent to Edinburgh was the projection and subsequent realization of an annual course of lectures on sanitary engineering for the benefit principally of medical graduates making a special study of public health. This action on Armstrong's part lent strength to that rising school within the University; and in his lifetime he had the satisfaction of seeing it erected into a separate department with a professor of public health at its head. When the Royal Institute of Public Health recently visited Edinburgh, Professor Armstrong occupied the chair in the Sanitary Engineering section. While referring to post-graduate courses it should be mentioned that shortly before his death Professor Jenkin was projecting in particular such a course on electrical engineering, but it was reserved for Professor Armstrong to make the arrangements whereby that idea was extended and carried into effect. Under the operations of the Scottish Universities Commissioners appointed some years later, electrical engineering was incorporated as an alternative portion of the engineering curriculum.

The Edinburgh International Exhibition of 1890 grew out of a suggestion originally of very modest scope for celebrating the opening of the Forth Bridge, but the schemes soon outgrew the proportions of the Edinburgh Exhibition of 1885. As befitted the idea in which it had inception, the 1890 Exhibition, besides covering a vast area with innumerable exhibits, was specially rich in railway interest, and from the engineering point of view was emphatically successful. Professor Armstrong early joined the projectors; he was Vice-Chairman of the Executive Committee and served on many sub-committees. He was convener of the Engineering and Machinery Committee of the previous Edinburgh International Exhibition of 1885.

Professor Armstrong acted as honorary local secretary for the last Edinburgh meetings of the Institution of Mechanical Engineers, the Iron and Steel Institute, and the British Association, sparing on each occasion neither physical nor mental effort.
to achieve notable success. He was a Fellow of the Royal Society of Edinburgh; for fifteen years he was Honorary President of the East of Scotland Engineering Association, and he was a Fellow of the Royal Scottish Society of Arts, attaining the Presidency in 1896. In 1899 he was elected a Fellow of King's College, London. From time to time he engaged in professional work of a more or less public character; but in later years, with the exception of his professional work, he devoted himself almost entirely to the duties of engineering adviser to the Local Government Board for Scotland and of such appointments as external examiner in engineering to the University of Wales.

Not even his appointment to Edinburgh could detach Armstrong from his beautifully situated home at Grasmere. Though little of an orator, he was a strenuous and polished writer; too practical to be a stylist he had keen literary sense and literary susceptibilities which in public were held in restraint. He was a trustee of Wordsworth Cottage; and the moving spirit of that quaint revival of and successful attempt to preserve the associations of the Lake District. As a parishioner of Grasmere he first appeared prominently in the part of advocate for sanitary reform. For many years he was a Justice of the Peace for the County of Westmoreland and Chairman of the Grasmere District Council.

Armstrong as a teacher was almost severely methodical; the limits of time and endurance were always in his mind, and he never for an instant forgot that the students before him would in two or at most three years cease to be students and in that sense be thenceforth thrown upon their own resources. His genial personality was an attraction even to the lazy: there is no doubt that he was beloved and respected, and it is certain that generations of Edinburgh engineering students besides merely learning have caught from him and carried away high ideas of professional duty and a true sense of the dignity of order in business.

As a professional friend he was a keen judge of probabilities, counselling caution when needful, but ever constructive in criticism and urgent of action. He was a man, a professor, and an engineer endowed with rare common sense, who held all sorts of difficulties merely as things to be circumvented or in the last resort subjugated. Armstrong had the good fortune to fall under the charm of the personality as well as of the writings of Charles Kingsley. It is probable that his bent towards public health took inception in that connection; it is almost certain that his personal influence over young men was a reflex of Kingsley. He was an advocate of athletic sports; and on rare occasions confessed that he won a cup for a high jump at Cambridge. At Edinburgh he
was the first professor who sang at a students' union gathering—the occasion being the students' reception of Oliver Wendell Holmes. He had a fine and cultured taste for music; was a strong supporter of the University Reid Concerts, with which, until recently, Sir Charles and Lady Hallé were associated; and privately he did much to strengthen the School of Music, to cement it to the University, and to awaken and sustain interest in music as a feature of University life.

Laid aside as it seemed for a short space by a slight attack of his old rheumatic trouble, heart complications suddenly supervened, and he died at Grasmere on the 16th November, 1900.

He was elected an Associate of the Institution on the 7th December, 1869, was subsequently placed in the class of Associate Members, and was transferred to the class of Members on the 5th April, 1892.

CHARLES EDWIN BROWN, born in Burnley, Lancashire, on the 4th July, 1856, was the fourth son of the late Dr. Thomas Brown, of Kennington Park, London. He was articled in June, 1874, to Mr. James B. Walton, of Westminster, with whom he remained as Chief Engineering Assistant until October, 1888. During that time he was continually engaged in the laying out of railways and in the preparation of Parliamentary and contract surveys, working drawings and estimates. Among other intricate surveys undertaken during that period of his career, he made an entirely new plan of the West London Extension Railway, including all the lines running through Clapham Junction. In addition to that he had the general superintendence of the office, and throughout the whole of his engagement with Mr. Walton, extending over fourteen years, he carried out his duties with the utmost fidelity and zeal.

At the end of 1888 Mr. Brown was engaged under Sir George Bruce, Past-President, and Mr. Robert White, on the preparation of Parliamentary plans, etc., for the conversion of the Glamorganshire Canal, South Wales, into a railway. In the following April he went out to Venezuela, also for Sir George Bruce and Mr. White, to make surveys for and report on a proposed line of railway to San Cristobal, a length of 30 miles, and also to report on the possibilities of navigation on about 150 miles of the Uribante River, a branch of the Orinoco. In 1890 he proceeded to Spain, where he was engaged, for Mr. James Livesey, on the preparation of the working drawings for the Santiago, Carril and