

MR. JAMES GREY ADAMSON, the eldest son of Mr. John Adamson, who was for many years an engineer in the Russian Navy, was born in Glasgow on the 15th of December, 1839. On the death of his father at Cronstadt, his mother and family removed to the town of Leven, in Fifeshire, and at the National School there he received a sound and well-grounded education. At the age of sixteen he was apprenticed for a period of seven years to the firm of Messrs. Henry Balfour and Co., general engineers and iron-founders, Leven, and, after passing through the drawing offices, as well as the pattern, turning and fitting shops, he received a certificate of honourable completion of apprenticeship.

Mr. Adamson proceeded to London in 1863 to seek his fortune, and in a few months was engaged to erect the machinery, and afterwards to undertake the general management, of a silver amalgamating and refining works near San Juan, in the Argentine Republic. There he remained for four years; but the scarcity of metals, and a widespread revolution breaking out in the Republic, caused the works to be abandoned, and the English-speaking population to seek shelter and protection in the adjoining Republic of Chili. Crossing the Andes in midwinter by an almost forsaken pass with the aid of two mules only, the usual passes being in possession of the revolutionists, Mr. Adamson, with his wife and child, saved their lives and the few valuables they were able to carry with them.

After a short residence in Valparaiso, Mr. Adamson turned his attention to the manufacture of nitrate of soda, on being appointed engineer to the nitrate works at La Noria, Province of Tarapaca, Peru. On the occurrence of the earthquake there in 1868, Iquique, Arica, and many towns on the west coast were destroyed, and he underwent much anxiety and fatigue in order to provide water for the people, as all the condensing machinery was washed into the sea by the earthquake wave.

A few months later the nitrate fields in the Desert of Atacama were discovered, near to what is now the flourishing town of Antofagasta, since become famous in connection with the war between Chili and Peru. Having erected distilling works near Salar del Carmen, a few miles from Antofagasta, the manufacture of nitrate was carried on with great success for a few years, till the field of nitrate ground, or "Caliche," was exhausted. Fresh fields were, however, discovered about 60 miles inland. Mr. Adamson, with his varied and general knowledge of mechanics and chemistry, designed a complete plant on principles entirely

new, to be erected at the Port of Antofagasta, connecting the "Caliche" beds with the works by a narrow-gauge railway. This design had the entire approval of what is now the great nitrate and railway company of Antofagasta (*Compania de Salitres y Ferro Carril de Antofagasta*).

In 1875 Mr. Adamson was sent to this country to procure the necessary machinery, in conjunction with Mr. J. F. Spencer, M. Inst. C.E., engineer to the company; and, not forgetting the works where his mechanical knowledge had been so well founded, the larger part of the order was placed in the hands of Messrs. Balfour and Co., as well as the contract for the erection of the complete plant at Antofagasta. It was while on a visit to this country in connection with the above work that Mr. Adamson joined the Institution of Civil Engineers as an Associate Member. He returned to Antofagasta, in 1876, to prepare the foundations for the ironwork and machinery, and passed through anxious months during the erection of the works and subsequent practical trial of his designs in nitrate production. These works are now a landmark to every traveller on the west coast of South America, and when the history of the war between Chili and Peru is written, the *Compania de Salitres y Ferro Carril de Antofagasta* will probably be prominent. Although situated in Bolivia, the nitrate beds were leased by Chilian and English capitalists, under favourable conditions, from the Bolivian Government, ratified by the Chilian Government. The company's profits and output were so great, that jealousy arose on the part of the Bolivian and Peruvian producers of nitrate, whose markets were disturbed. A demand was accordingly made by the Bolivian Government for an extra tax on the output beyond the conditions of the original contract, which compelled the company to appeal to the Chilian Government for protection, the result being a declaration of war between the neighbouring Republics.

Mr. Adamson, during the visits of the Peruvian ram "Huascar" in the bay, held to his post and visited several of the battle-fields, his house becoming almost the headquarters of the officers of the Chilian army garrisoning the town. The excitement of the war, an accidental fall of 18 feet whilst at his duty on the works, the poisoning by noxious vapours whilst examining the boiler flues, and the worry incidental to the management of works of this magnitude, tended to impair his strength, and in addition an acute attack of liver complaint, necessitated his removal to a milder climate. Arriving at Valparaiso he sought the best medical assistance obtainable at the English hospital there, but his case

was pronounced hopeless from the first, and he expired on the 14th of May, 1881, at the age of forty-one years.

Of the personal worth, unbounded kindness and hospitality, of Mr. Adamson, Englishmen visiting Antofagasta can well testify, and the premature death of so valuable and useful a life will long be regretted on the West Coast. A monument has been erected over his grave by his friends, including the workmen who were under his care. Mr. Adamson leaves a widow and a young family to mourn his loss.

Added to nitrate production, Mr. Adamson erected a complete plant for the extraction of iodine,—for the distilling of water for drinking purposes from sea water, which only was available,—as also works for the manufacture of the gunpowder required for the blasting purposes of the company.

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MR. WILLIAM EXALL was born at Godalming, Surrey, in May, 1808. Two years later his father emigrated with all his family to America, settling in Richmond, Virginia. William was apprenticed to a bookseller and bookbinder, but young Exall's connection with bookbinding ceased with his apprenticeship. Possessing considerable mechanical ability, and desiring a sphere in which he would have an opportunity of cultivating this faculty, he joined his two brothers in establishing a business as agricultural machinists at Richmond, in which the brothers were successful. About the year 1830 their uncle, Mr. Barrett, who then carried on what was known as the Katesgrove Foundry, Reading, invited Mr. William Exall to come over and assist him in the business, and he complied with the proposal. On arriving his energies were at once devoted to the improvement and development of agricultural machinery, and eventually he was admitted a partner of the firm.

During the construction of the Great Western Railway, Mr. Exall, through his engineering knowledge, was brought into contact with the late Mr. I. K. Brunel, Vice-President Inst. C.E., the engineer of the Company, and his numerous staff. It need hardly be said that this connection proved very advantageous, for it brought a large accession of business to the Katesgrove Foundry, which began to assume considerable importance as a place for the manufacture of machinery of various kinds. The connection between the firm and the railway company continued until the main line was finished, and during that period Mr. Exall worked with the