

was then open as far up as Chicla, 12,218 feet above the sea. He was engaged on the survey and construction of the extension over the summit, a tunnel about $\frac{1}{2}$ mile in length at an altitude of 15,720 feet, and also made a survey and plan of the portion of the line between Chicla and Lima.

It being desired to expedite the completion of the survey of the River Desaguadero between Lakes Titicaca and Poopo in Bolivia, Mr. White was sent out in charge of a party to join the engineers already engaged on that work. The River Desaguadero at that spot is at an altitude of nearly 12,000 feet, and the country along its course is exceedingly barren. In 1892 he was engaged by the Peruvian Corporation and placed in charge of one of the two parties of engineers sent out to survey and locate a railway proposed to connect the Oroya line with the navigable waters of the Amazon. This work lasted about five months, and was of a difficult and also dangerous character, owing to the unfriendliness of certain of the natives on the head waters of the Amazon. All the members of the engineering expedition returned to Lima safely and in good health. The means of transport were, first, and as far as a track existed, by pack mules; afterwards, when the forest was impenetrable, by canoes worked by friendly natives.

Mr. White returned to England at the end of 1892, and in the following year was engaged by Sir Douglas Fox and Mr. Francis Fox to set out and make the working plan and sections of a portion of the Great Central Railway extension to London. In 1894 he prepared the estimates and made the plans of a section of that line, and for the following five years was Resident Engineer in charge of the construction of a section of that railway for Messrs. Fox.

In December, 1899, Mr. White went to Ceylon as Chief Assistant of the Northern Railway for the purposes of superintending the construction of a new line from Kankasanturai to join the existing line. He was thus engaged until his death, the result of a snake bite, which took place at Jaffna on the 28th October, 1900.

Mr. White was elected an Associate Member of the Institution on the 6th May, 1890, and was transferred to the class of Members on the 12th December, 1899.

MATTHEW WOODIFIELD, born at Durham in April, 1827, was the son of Mr. Matthew Woodifield, of that city and of Horden Hall, co. Durham. Family reasons necessitating residence in the south of Europe, his early education was obtained from German and French tutors and at a school in Geneva. On returning to

England he studied for four years at the Engineering College at Putney, and was then subsequently employed as an assistant on various works, including the construction of the Lynn and Ely section of the East Anglian Railway, now part of the Great Eastern system.

Desiring to obtain employment in the colonies, Mr. Woodfield, on the conclusion of the last-mentioned work, proceeded to Cape Town at the age of 22. Furnished with a personal introduction to the Governor from Lord Grey, then Secretary of State for the Colonies, he speedily obtained employment on Government Works, being chiefly engaged on surveys and on the construction of roads and bridges. In 1853 he carried out an extensive trigonometrical survey in Cape Colony, and acted subsequently for two years as Inspector of Roads under the Central Board of Commissioners of Public Roads. Mr. Woodfield was next appointed Assistant Colonial Engineer, and was subsequently for five years First Assistant Colonial Engineer and Commissioner of Roads resident in Cape Town. One of his chief works in South Africa was the road up the Zuurberg, hewn out of the rock, the summit of which mountain was used as a convict settlement. This road was under construction for four years and is still in existence.

Owing to curtailments in the department, Mr. Woodfield retired from the post of Assistant Colonial Engineer, with a small pension, in 1864, and returned to England. Two years later he again proceeded to South Africa to take charge of the works of the Cape Copper Mining Company in the Namaqualand district. After having been thus engaged for four years, ill-health compelled him to leave the colony. Subsequently he visited professionally on various occasions North and South America, Spain and Norway; but during the later years of his life the state of his health rendered him unable to undertake work, although his interest in mining remained unabated to the end. Mr. Woodfield died at his residence, 42 Castletown Road, West Kensington, on the 19th January, 1901.

He was elected a Member of the Institution on the 4th April, 1865.

ARTHUR MONTEFIORE WIRE EASTEN, son of Mr. John Easten, of Lee, was born on the 14th July, 1866. After attending technical classes at the City of London College in 1888-89, he went out to South Africa in the latter year, and joined the Engineering Staff of the Natal Government Railway, under Mr. M. W. Carr, Engineer-in-Chief. Mr. Easten was employed