

strated the strength and economy of the material. His attempt to nullify the injurious effects of copper smoke, by converting it into sulphuric acid, gave promise of commercial success, but the resignation of his post in the year 1870 hindered its proper development, much to the disappointment of many friends. After leaving Cwm Avon, he gradually withdrew from the profession, and having settled at Neath, he took a short rest after an energetic career, passing away on the 10th of April, 1878.

If there be one thing by which Mr. Struvé ought to be remembered, it is that he was the first to introduce mechanical ventilation into Welsh collieries. For a Paper on "The Ventilation of Collieries, &c.," read before the Institution on the 19th of November, 1850, he received a Telford Medal.¹ His life was one of work, not so much for himself as for others, and it is not only among his own relations that his loss as a friend is felt. This is not the place to descant on his private virtues; but as illustrative of his kindly feeling, it may be mentioned that, on one occasion when it was suggested that his views had been criticised with unnecessary warmth, during a discussion at the Institution, Mr. Struvé replied, to this effect, "No, when you have lived a little longer, you will find that life is something like the manufacture of a rail: we come into the world like the raw iron; get puddled and hammered and squeezed and rolled, but at last the finished rail is produced. The more thoroughly the process is carried out, the better the finished rail." He thoroughly understood workmen, and amongst colliers was reckoned to be a collier; added to which his intimate knowledge of the South Wales coalfield made his opinion valuable. He was examined on more than one occasion before Committees of the Houses of Parliament on matters connected with the working of coal, and at one time of his life had a good deal of employment as an arbitrator in such matters. Probably few men were more trusted, and that trust was never misplaced.

Mr. Struvé was elected a Member of the Institution of the Civil Engineers on the 6th of March, 1849.

MR. CHARLES TARRANT, the son of Mr. Charles Tarrant, Engineer to the Grand Canal Company, was born in Dublin in 1815. He was educated by a connection named Crawford, who

¹ *Vide Minutes of Proceedings Inst. C.E., vol. x., p. 22.*

resided in the neighbourhood of Dublin, and was apprenticed to his father, being engaged on the Grand Canal and on private works. He became Assistant Engineer to the Grand Canal Company under his father, and afterwards went to Scotland in connection with Mr. Henry, who was employed in the construction of the Edinburgh and Glasgow railway. He returned to Ireland on the completion of that work, and became Assistant Engineer to the Waterford and Kilkenny railway, under the late Captain Moorsom, M. Inst. C.E. On the completion of that line, he accepted an engagement on the Susquehanna and Reading railway, in America, where he, during some years, pushed on the works vigorously, employing vast numbers of both German and Irish navvies; but the climate did not agree with his family, and he abandoned the work and returned to Ireland. Having passed a competitive examination for the office of County Surveyor, he was appointed by the Lord Lieutenant of Ireland to Monaghan, and soon after exchanged to Waterford, which he held to the time of his death. He was largely employed in the district in architectural as well as in drainage works; the amalgamated prison of the county and city of Waterford being one of his principal public buildings. In conjunction with Mr. Wellington Purdon, M. Inst. C.E., he was appointed Engineer to the Waterford, Dungarvan, and Lismore railway, now approaching completion, under the Companies Acts of 1872 and 1873. He died suddenly on Tuesday, the 31st of July, 1877, from heart disease of long standing. He was a thoroughly upright, single-minded man, and his county works, roads, &c., are admittedly amongst the best in Ireland. A few months before his death, he was appointed, by the Lord Lieutenant, joint Commissioner, with Mr. W. Forsyth, of the Board of Works, and the County Surveyor of Cork, to report on Youghal bridge, connecting the counties of Cork and Waterford; and plans prepared by him for the erection of a permanent stone and iron structure, to replace the present decayed wooden bridge, were unanimously approved by the grand juries of Cork and Waterford.

Mr. Tarrant was elected a Member of the Institution of Civil Engineers on the 5th of December, 1865.

MR. JOHN RUSSELL FREEMAN, the fourth and last surviving son of Mr. William Freeman, of Millbank, was born in Westminster on the 17th of March, 1826. He was brought up as a stone