

for piers. This latter occupation led to his devoting much attention to the subject of the construction of harbours generally; and he originated a plan of detached open-work piers for the formation of ports, where natural facilities are not afforded, known as Baly's Octopus System of Piers.

He had completed designs for a port at Madras, and was engaged in studies of similar works for the construction of piers at Bourne-mouth and Folkestone, and at Ostend and Blankenberg, when his too early death removed him from a circle of professional and private friends, who deplore the loss of one whose courteous manner, kindly nature, and genuine honesty, together with a mind stored with knowledge, will ever render him dear to memory. Mr. Baly was singularly gifted with the power of applying mathematical science to practical engineering, and was of most industrious habits, but endowed with greater mental than physical power. He was elected a Member of the Institution of Civil Engineers on the 6th of April, 1852, and died on the 5th of September, 1875.

In 1863, the question of the reconstruction of Westminster Bridge being under consideration by a Committee of the House of Commons, Sir Charles Barry sought the assistance of Mr. Baly to devise a mode of construction in iron, by which the roadway over the arches should be as thin as possible, and the bridge as level as practicable. The evidence founded on this advice influenced, it is believed, the adoption of the plans eventually carried out. Subsequently Sir Charles Barry occasionally asked the opinion of Mr. Baly, for whom he entertained a high respect, on matters referring to any peculiar adaptation of iron in structures.

Mr. JAMES DEES, of Whitehaven, and Riverdale, near Bellingham, Northumberland, was one of those self-trained engineers whom talent, natural aptitude for the work, combined with great application and perseverance, brought in early life into contact with civil engineers; and by the exigencies of the times he was raised to the surface during the railway mania, when the demand for civil engineers far exceeded the supply of those regularly trained in the profession.

The only child of parents in a comparatively humble position, he was born at Meldon, near Morpeth, in March 1815. In early life he began business as a builder and contractor, and, whilst so engaged, he along with one or two others successfully carried out a contract for the construction of the stone railway bridge over the river Tees at Croft, near Darlington, designed by Mr. Henry

Welch. This was a skew, or oblique bridge of three spans of 60 feet each, with an angle of obliquity of 50° , to carry what was then called the "Great North of England railway." The foundation-stone was laid in May 1838, and the work was completed in the summer of 1840. Here Mr. Dees and his partners adopted the principles of operation advanced by Mr. Peter Nicholson in his work on the "Construction of the Oblique Arch," the stones being dressed to templates made according to the formulæ laid down in that work.

In 1845 Mr. Dees removed to Cumberland, where, as Assistant Resident Engineer, he superintended the making of the Whitehaven and Furness Junction railway under the Stephensons. On the completion of that line he was appointed Engineer to the Company, and shortly afterwards was also chosen for the same office by the Whitehaven Junction Railway Company. In 1851 he made the tunnel, $\frac{3}{4}$ mile long, under part of the town of Whitehaven which connects these two railways. This was a work of some difficulty, owing to the loose nature of the ground and the fact that it was disturbed by old colliery workings. In 1853 he was appointed Engineer to the wet dock at Maryport, which he constructed to the entire satisfaction of its promoters, and in the same year received a similar appointment from the Whitehaven, Cleator, and Egremont Railway Company, whose line was projected and formed under his superintendence. Having become, a few years later, connected with one of the largest and most lucrative hematite iron-ore mines in the neighbourhood of Whitehaven, Mr. Dees, finding himself in the possession of ample means, retired from the active exercise of his profession. He took a prominent part in public matters, and was for some years captain of the Whitehaven Volunteer Artillery Corps, and a trustee of the town and harbour of Whitehaven. He was also at the time of his death a Governor of the Whitehaven Infirmary; a Director of the Whitehaven Shipbuilding Company, and of the Whitehaven, Cleator, and Egremont Railway Company; Deputy Chairman of the Solway Junction Railway Company, and a Justice of the Peace for both the counties of Cumberland and Northumberland. In later years repeated attacks of gout somewhat crippled his energies, and he spent much of his time at his country mansion of Riverdale, where he died on the 19th of September, 1875, from internal hemorrhage, after a short illness, highly esteemed in both counties and throughout the North of England, where he was best known.

Mr. Dees was elected a Member of the Institution of Civil Engineers on the 7th of February, 1854.