

ROBERT CARR, born on the 29th November, 1827, at South Shields, served an apprenticeship of seven years (1841 to 1848) to Mr. T. D. Marshall, Mechanical Engineer of that town, after which he entered the employment of Messrs. Sir W. G. Armstrong & Co. of Newcastle-on-Tyne, and was identified with the earliest work and development of hydraulic power by that firm, for whom he had charge of the erection of hydraulic machinery for the London and North Western Railway Company at Haydon Square depôt, Minorities; for the Great Northern Railway Company at King's Cross; and for the St. Katharine Dock, London. He also assisted in the management of the supply of steam and hydraulic power which the same firm had undertaken to provide for the Exhibition of 1851. In 1856 Mr. Carr was appointed Resident Engineer to the St. Katharine Dock Company, with the responsible superintendence of all works, buildings and machinery. In 1864, on the amalgamation of the St. Katharine Dock Company with the London Docks Company, the engineering of the latter was added to his duties, and many important works, such as new jetties, buildings and the remodelling of the swing-bridge, were carried out under his direction.

On the incorporation, in the following year, of the Victoria Dock with the London and St. Katharine Docks Company Mr. Carr became engineer of them all. Three years later a scheme was brought forward by the Company for an extensive enlargement of the Victoria Dock together with a new and deeper entrance into the Thames at Gallions Reach. With this scheme also Mr. Carr was closely identified, in the preparation both of the original plans and of the estimates, in conjunction with Sir Alexander Rendel, at that time Consulting Engineer to the Company. In 1875 the contract for the Victoria Dock Extension was let to Messrs. Lucas and Aird, under the superintendence of Sir Alexander Rendel, and on its completion in 1880 the care of this extension, now renamed the Royal Albert Dock, devolved on Mr. Carr, who had closely watched its construction and had rendered considerable assistance to the London and St. Katharine Docks Company, in view of the future development of the dock.

In 1880 one of the earliest installations of refrigerating machinery, at Jetty A, Victoria Dock, was put down, and, proving successful, the demand for cold storage of meat from abroad increased so rapidly that Mr. Carr was called upon to enlarge the accommodation, and by the year 1892 the storage capacity had risen to 564,000 cubic feet, capable of holding

161,000 carcasses.¹ In 1883 new tobacco warehouses (T, V, W, & X) and extensive granaries at the Victoria Dock were erected, and in the following year the powerful pumping-plant at Gallions, capable of throwing 125,000 gallons per minute, was completed; by means of which the water in the Royal Albert Dock is maintained at Trinity high-water, or above it when required.

In 1884, in consequence of the large increase in trade and the greater size of vessels coming into the Royal Albert Dock, it was decided to construct an additional entrance-lock 550 feet in length, 80 feet in width, with a depth of 36 feet, and at the same time to enlarge the basin from 12 to 15½ acres and to construct a river wharf near the entrance 1,120 feet long, with a depth of 46 feet alongside. Plans for these extensions were prepared by Mr. Carr, who carried out and completed them in 1886, assisted by Mr. J. Thomas, as resident engineer, and by the staff of the Dock Company without the intervention of a contractor. One very interesting feature in connection with these works was the removal of a concrete wall, 520 feet long, to effect the junction of the new part of the basin with the old. This wall was reduced in thickness to about 6 feet, drilled with some 1,430 holes, which were filled in with gelatine dynamite—of which 2,900 lbs. were used—and early on the morning of Good Friday, the 23rd April, 1886, the whole of these charges were fired simultaneously and the wall successfully demolished.²

In 1888, on the formation of the London and India Docks Joint Committee, Mr. Carr was appointed their first Chief Engineer, and early in 1892 he was called upon to prepare plans for a new entrance and enlargement of the basin at the West India Docks, Blackwall. These were at once adopted, and in the autumn of the same year Messrs. Lucas and Aird commenced to carry out the work. In October Mr. Carr went to Liverpool to inspect some new pumping machinery and on the return journey was seized with a slight paralytic stroke, doubtless the result of overwork and severe mental strain. With rest and care he was fortunate enough to throw off the effects of this illness and shortly afterwards was able to go about as usual, but the Joint Committee at this juncture suggested his retirement from active duty, and at the same time the Chairman was directed to inform him how highly they appreciated his services and that they felt it impossible to allow him to be subjected to further strain. They

¹ *Ante*, p. 1.

² Minutes of Proceedings Inst. C.E., vol. lxxxvi. p. 329.

therefore offered him the appointment of Consulting Engineer, especially with regard to the completion of the Blackwall entrance, the design of which he had been entirely responsible for up to that time. This work, with its lock, 480 feet long, 60 feet wide and 30 feet deep, was finished in September, 1894, and shortly afterwards Mr. Carr retired on a well-earned pension. At a meeting of the London and St. Katharine Docks Company in 1892, the Chairman, Mr. W. E. Hubbard, in mentioning the matter to the shareholders, had said :—

“Before closing my address, I must allude to one change among our principal officers. Our Engineer, Mr. Robert Carr, who has served you most faithfully and efficiently for thirty-six years, is about to retire shortly, having all but attained the age at which he is entitled to a pension and being in somewhat impaired health. He has spent himself freely in your service, and by shrewd common sense and by most conscientious economy must have saved your pockets many thousand pounds. We all, I am sure, wish that he may long be spared to enjoy the leisure he so well deserves.”

Mr. Carr's illness in 1892 caused him considerable debility, and although he enjoyed moderate health for three years, symptoms of gradual decay developed themselves. In December, 1896, serious illness with great weakness supervened, and although he rallied sufficiently to be able to remove to Bournemouth, no permanent improvement took place, and, taking cold through the inclement weather of the following spring, he died there on the 6th April, 1897.

Mr. Carr was elected a Member on the 2nd March, 1875, and was a frequent attendant at the meetings. He was also a Member of the Institution of Mechanical Engineers. He took a keen interest in the volunteer movement, and was one of the first to be enrolled, retiring in 1885 from the 15th Middlesex (Customs and Docks) Corps, with the honorary rank of Major after twenty-five years' service. He also took a considerable amount of interest in civic, local and political matters. He was a Liveryman of the Shipwrights Company, a Member of the Limehouse District Board of Works, a ruling Councillor of the Primrose League, and Churchwarden of St. John, Wapping, from 1882 to the date of his death. Mr. Carr's indomitable perseverance and industry were a noble example to the large number of men whose work it was his office to direct and control. He was necessarily possessed of considerable influence and power, which were often exerted on behalf of those who sought his good offices, and there are many who owe their present positions to his friendly intervention. He was true,

just and loyal. He delighted in his work and entertained a great regard for those who served under him, by whom he was in turn respected and esteemed. His widow and children mourn a devoted husband and father, while many have suffered the loss of a staunch and constant friend.

JAMES CRAIG, born in Aberdeen on the 24th July, 1844, became a pupil, at the age of seventeen, to Mr. William Boulton, of Montrose, under whom he was employed on survey and drainage work. He was afterwards engaged, during the year 1865, as Assistant Borough Engineer to the corporation of Dundee on the extensive sewerage works then in progress in that town.

In 1866 Mr. Craig obtained by competitive examination the post of an Assistant Engineer in the Public Works Department of the Government of India. He was posted to the Province of Hyderabad and served as Assistant Engineer in the Secunderabad Division for six years. During that time he was employed chiefly on the construction of new barracks for British troops, and in 1871 he received the commendation of the Government for the zeal and energy displayed by him in cleansing and purifying the Hussar barracks at Secunderabad after an outbreak of cholera. Another important scheme—the water-supply of South Trimulgherry—was also projected and carried to successful completion by him. In 1872 he was selected to assist Major Swetenham, R.E., in the construction of a complete set of new barracks for a British cavalry regiment in North Trimulgherry. The whole of the estimates and details were framed and elaborated by him, and for five years the construction of two-thirds of the project was carried on under him, for some time as Assistant Engineer, and at others as Executive Engineer, the quality of the work being acknowledged to be unsurpassed in India. The general scheme for the water-supply of North Trimulgherry was also prepared by him, and was afterwards supervised and carried out by another officer, with but slight modification from the original design.

Early in 1878 Mr. Craig was posted to the executive charge of the West Berar Division, where he was employed on the construction of roads, buildings and impounding reservoirs, in addition to the ordinary maintenance works of a District Division. Among other works upon which he was engaged may be mentioned the construction of 150 miles of new roads, and of two reservoirs