

Alfred Edward Carey

of his adult life with his sister Emma in or near Croydon.

MIKE CHRIMES

[Membership records, ICE; Pike; ICE Library catalogue *MinProcICE* 145, 100–103; 158, 90–91, 143; 113, 50–57; 118, 126]

#### Works

La Guariá, Venezuela, harbour, engineer (RE?)  
 Hastings harbour, engineer  
 Coast Development Corporation, engineer  
 Thames Haven oil wharves, engineer  
 Central (Unemployed) Body, London, engineer  
 Commissioners for Fobbing, Foulness and Dengie Levels, engineer  
 Southwold sea defences and harbour, engineer

#### Publications

1887. Harbour improvements at Newhaven, *MinProcICE*, 87, 92–113  
 1892. The inspection of Portland cement for public works, *MinProcICE*, 107, 40–72  
 1904. Sanding up of tidal harbour, *MinProcICE*, 156, 215–231  
 1905. Coast erosion, *MinProcICE*, 159, 42–57  
 1907. Protection of seashores from erosion, *Trans. Soc. Arts*, May 15  
 1907. The mammoth hunters  
 1912. Breakwater building  
 1914. The making of high roads  
 1918. Tidal lands: a study of shore problems

**CARFRAE, George Somervell** (1854–1934) surveyor and consulting engineer, a son of Thomas Carfrae (1805–1889, land and road surveyor) was born on 13 January 1854 in Edinburgh, where he was brought up, educated and operated the

business begun by his father in 1829 which, remarkably, continued for 149 years.

Thomas Carfrae's firm soon became a leading land surveying practice in East and Central Scotland operating from 84 Grassmarket (1829–1830), 12 Royal Exchange (1831–1833), and then from his residence at 1 Erskine Place (1834–1888). His work for proprietors, public bodies, architects and civil engineers (Grainger & Miller, Anderson, Buchanan, Bryce, Playfair, Jardine, Stevenson, McGibbon & Ross etc.) included surveys for buildings, estates and roads; John Watson's College (*Scottish National Gallery of Modern Art*); the proposed *Edinburgh & Glasgow Railway* (1831); bridges; iron works, collieries, quarries, cemeteries; and Edinburgh's Earthen Mound with railway tunnel; sewers; water supply; archway from the Grassmarket to Hanover Street; and the National Gallery (1850).

From c.1850–1859 the firm was known as Carfrae & Geddes (Auckland C., father of Sir Eric and Sir Auckland Geddes, both of whom held high office in government); from 1860–1869 as Carfrae & (William) Clouston and, from 1877, as Carfrae & (Andrew W.) Belfrage.

George Somervell Carfrae started a four-year indenture with the firm in 1870, when his day book records him working a six-day week, in addition to feuing and road work, measuring and calculating prices for growing crops of turnips and potatoes. These types of work formed a core of the firm's activity for young assistants from 1829 until the Second World War.

From 1870 the firm became increasingly involved with civil engineering and in 1888, just prior to his father's death, Carfrae was promoted junior partner in what became Belfrage & Carfrae C.E. The firm then operated as such until 1903 when Belfrage retired and continued as G. Somervell Carfrae C.E. until William Morrison (1861–1942, *MinProcICE* 1899), who joined as chief assistant in 1894, was made a partner in 1922. The practice then became Carfrae & Morrison C.E. and in 1926 removed from Erskine Place to larger premises at 4 Hill Street.

During George Carfrae's 57 years with the firm it made a significant contribution to the infrastructure of urban development, mainly in and around Edinburgh and in the Lothian counties. The work undertaken included water supply, sewerage and drainage and the planning and development of numerous large feuing estates. Operations on the latter involved laying out ground for building, plan preparation for individual feus and the construction of roads and sewers. The firm's feuing work continued until about 1940.

Railway work included preparation of and presenting evidence in support of, or in opposition to, the promotion of parliamentary bills, and dealing with claims under the Land Clauses Act. The firm also engaged in small-scale bridge-works, for example at Haddington (1898–1900) and Cockburnspath Glen (1915). Victoria Bridge, Haddington, still in service, is an elegant, low rise, twin-arch, structure with 60 ft spans and one of the

earliest steel bridges of its genre [Paxton & Shipway 121–122].

Carfrae, a 'noted engineer' [*Scotsman*] was also a land surveyor and valuator for public works and property by private treaty. In addition to his private work he was also Engineer to the Edinburgh Merchant Company; Commissioner to the Board of Supervision and Local Government Board (Scotland); a Board of Trade Valuator (Railways) for Scotland; and Engineer for the burghs of North Berwick, Melrose, and Midlothian County Council.

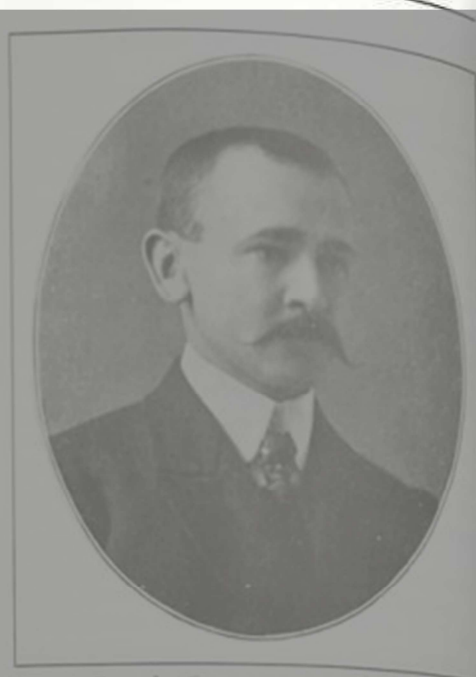
He retired in 1927 and the firm continued to thrive under Morrison who was joined by his son of the same name in 1927. William Morrison Jr (1906–1988, MInstCE 1955) took over as a partner when his father died in 1942 and managed the firm for many years, eventually winding it up at 4 Hill Street when he retired in 1978. By then, with regionalisation in local government, demand for the firm's services, then mainly in public health engineering, river improvement and road construction for local authorities, had diminished.

Carfrae married, firstly in June 1880, Elizabeth Miller Brash, and secondly, Alice Wilson, in June 1890. His residence was at 10 Garscube Terrace, Murrayfield, Edinburgh, where he died on 21 May 1934 in his 81st year, being survived by his daughter Elizabeth Miller (*d.* 1966). He was buried in the Dean Cemetery, Edinburgh.

ROLAND PAXTON

[Archival material of the firm including 19th century letter, report, day and survey books, drawings, list of several thousand plans (1800–1910) and W. Morrison's (1978) 'Short History of the firm now known as Carfrae & Morrison, C.C.E.' [Edinburgh], in a private collection; ICE membership records; When Carfrae & Morrison was wound up, 21 items from its comprehensive accumulation of instruments and equipment dating from 1829 were donated to what is now the ICE Scotland Museum at Heriot-Watt University [[http://web.sbe.hw.ac.uk/ICE\\_Museum/collection.htm](http://web.sbe.hw.ac.uk/ICE_Museum/collection.htm)]; A. Eddington, W. T. Pike (ed.), 'Carfrae', *Edinburgh and the Lothians at the opening of the twentieth century* by A. Eddington, *Contemporary biographies*, Edinburgh, 1904, 276, (portrait); *Edinburgh Post Office Directories*; *Scotsman*, 22 June 1934, 10c; R. Paxton & J. Shipway (2007) *Civil Engineering Heritage Scotland Lowlands and Borders*.]

**CARTER, George Fearnley** (1869–1962) Borough Engineer, Croydon, was born on 8 March 1869 in Heckmondwike, Yorkshire, the eldest of three children of Joseph Fearnley Carter (1838–1919) and Jane née Longbottom. His father was an agent for the construction of the Jubbulpore section of the East Indian Railway in the 1860s and subsequently became an Alderman in Leeds. Carter studied engineering at what became Leeds University and was Treasurer of the Engineering Society there. A pupil of Thomas Hewson MInstCE the Leeds City Engineer he gained experience of all aspects of municipal engineering, rising to principal



George Fearnley Carter

assistant in charge of the 1895 Bill for Sanitary Improvements.

In 1899 Carter was appointed Deputy Borough Engineer of Croydon, promoted Borough Engineer in 1903. He retired in 1934. He was responsible for improvements to the tramways, water supply and main drainage. He maintained his connection with Leeds when he worked on the Parliamentary proposals for a large sanitation scheme.

Carter was elected AMInstCE in 1894 and transferred MInstCE in 1906. He was also a member of the Association of Municipal and County Surveyors and its President (1924–1925), the Water Engineers, and a Fellow of the Royal Sanitary Institute. He married Sarah Eleanor Atkinson, from Leeds, in 1898, and had a son. He died on 12 January 1962.

MIKE CHIMES

[Pike, 1908; *ICEProcs*, 23, 798–799]

**CARTWRIGHT, George** (1850–1934) dock engineer, was born on 3 November 1850 in Work-sop, Nottinghamshire, the son of William Alexander and Harriet Cartwright. A pupil of Charles Sacre (1831–1889), from June 1869, locomotive superintendent on the Manchester, Sheffield and Lincolnshire Railway. He then worked under Mark Hyde on the Cheshire Lines Committee line between Manchester and Liverpool central stations. His career as a dock engineer began in 1873 as resident engineer at Grimsby Docks. He was responsible for surveying the construction of a fish dock, Alexandra Dock (26 acres), a 400 ft graving dock and other facilities. He then took charge of the MSLR's 106 miles of canals, based at Doncaster. He returned to Grimsby as Resident Engineer at the Docks in 1891. In 1912 his authority was extended to include