

Stevenson, Alan (1807-1865), civil engineer, was born on 28 April 1807 in Edinburgh, the eldest surviving son of Robert Stevenson (1772-1850) and his wife, Jane (c.1779-1846), daughter of Thomas Smith (*hap.* 1752, *d.* 1815), engineer to the Northern Lighthouse Board. He was the brother of David Stevenson and Thomas Stevenson and the uncle of Robert Louis Stevenson. He was educated at the high school and university of Edinburgh, where from 1821 he read Latin, Greek, and mathematics with a view to entering the church. In 1823 Stevenson decided to follow an engineering career and, after six months at the Revd Pettingal's Twickenham Finishing School, he commenced a four-year apprenticeship to his father, a civil engineer. During each winter he attended classes at Edinburgh University appropriate to his career and in 1826 he graduated MA, gaining under Sir John Leslie (1766-1832), professor of natural philosophy, the Fellowes prize for excellency as an advanced student of natural philosophy. In the same year he read his first paper to the Royal Physical Society of Edinburgh, on the 'causes of obscurity in style', urging greater clarity in writing.

Stevenson's thorough training from 1823-7 included railway surveying under William Blackadder of Glamis; bridge building, river improvements, harbour and lighthouse engineering under his father's direction; and a study tour of works in Sweden and Russia with the engineer Robert Bald. In 1828-9 he gained experience on works conducted by Thomas Telford and James Walker at Hull docks, on the Birmingham Canal under its resident engineer, William Mackenzie, and on a new dock at Liverpool. Encouraged by his father, and with access to his notes, Stevenson compiled a list of British lighthouses, describing their appearance at night. This pocket-book list, the first of its kind, published in 1828 as *The British Pharos* (2nd edn, 1831), was very useful to mariners.

In 1830 Stevenson, in addition to being an assistant in his father's firm, was appointed clerk of works to the Northern Lighthouse Board, to which his father was engineer. During the following three years he worked on new lighthouses at the Mull of Galloway, Dunnet Head, Douglas Head, Barra Head, Girdleness, and Lismore. For some years Stevenson had been interested in improving lighthouse illumination and in the summer of 1834 he visited lighthouses and workshops in France. There he gained knowledge of the work of the Fresnel brothers, Augustin (1788-1827) and Leonor, Jean Baptiste François Soleil (1798-1878), Isaac-Ami (1798-1878), and Bordier-Marcet (1768-1835), and, in particular, of Fresnel's dioptric apparatus which used lenses instead of mirror reflectors to enhance light intensity. In the following year Stevenson's influential Report ... on Illumination of Lighthouse by Means of Lenses which included a valuable account of French practice was published. In 1835 under his direction the revolving light at Inchkeith and in 1836 the fixed light of the Isle of May were made dioptric instead of catoptric, with a resulting threefold order of increase in brightness. For Trinity House in 1836 Stevenson designed and superintended the installation of the first dioptric light in England at Start Point, Devon.

Stevenson was taken into partnership in the firm by his father about 1832. Work upon which he was engaged with his father from 1832 to 1837 included preparation of 'A chart of the coast of Scotland', Ballyshannon harbour improvement, Granton harbour, plans for Edinburgh and Glasgow, Edinburgh and Dundee, and Perth and Dunkeld railways, Perth harbour, and Tay and Ribble navigation improvements. Soon afterwards he wrote an authoritative account of the development of 'sea lights' from the earliest times to about 1838 which was published in the seventh and eighth editions of the *Encyclopaedia Britannica* in 1840 and 1857 respectively. From December 1837 until August 1843, Stevenson was almost exclusively employed by the Northern Lighthouse Board on the design and construction of Skerryvore lighthouse, this being mutually agreed as too arduous a task for his father who was by then sixty-five. In January 1843 Stevenson succeeded his father as the board's engineer and from then until paralysis dictated his retirement in 1853 he was responsible for the design and construction of new lighthouses, in addition to Skerryvore, at Little Ross, Covesea Skerries, Chanonry Point, Cromarty, Cairn Point (Loch Ryan), Noss Head, Ardnamurchan, Sanna, Heston Island, Hoy, and Stornoway. On 11 September 1844 he married Margaret Scott (1813-1895), daughter of Humphrey H. Jones of Llynon,

Anglesey and his wife, Jean, *née* Scott; they had one son, the art critic Robert Alan Mowbray Stevenson, and three daughters.

Stevenson's national reputation was mainly based on his design and execution of Skerryvore lighthouse, his classic account of which, together with his notes on lighthouse illumination, were published in 1848 as *Account of the Skerryvore Lighthouse*. These notes were extended and more widely propagated through *A Rudimentary Treatise on the History, Construction and Illumination of Lighthouses*, published in 1850. Both works were of outstanding technical value well into the twentieth century. Skerryvore lighthouse was a great engineering achievement and is still in service. It is 155 ft high, located on an isolated reef 12 miles west-south-west of Tiree and exposed to the full fetch of the Atlantic. The first season's work, the beacon-barrack erected in 1838, was totally destroyed by a November storm. The eventual creation of the lighthouse by 1843 severely tried Stevenson's courage, patience, and health and fully exercised his undoubted ability. The lighthouse has been widely acknowledged to be the finest example for mass combined with elegance of outline of any rock tower. Stevenson adopted for its shape the hyperbolic curve which was the form with the least mass and lowest centre of gravity of the various options examined. It strongly influenced the design of the Alguada lighthouse built for the Indian government in 1862–5. Skerryvore's revolving dioptric apparatus was the most advanced in the world at that time, with prismatic rings instead of mirrors below the central belt, thus greatly extending the improved dioptric effect. Stevenson further improved its efficiency by introducing inclined astragals into the lantern. His improvements to the dioptric system, which included the conversion of Fresnel's narrow lenses in fixed systems into a truly cylindrical drum, led to its wider adoption. He introduced prismatic rings above and below the central belt, thus securing equal distribution of light all round and extending dioptric action through the whole height of the apparatus.

In 1830 Stevenson, sponsored by Telford, became a corresponding member of the Institution of Civil Engineers, and in 1838 a fellow of the Royal Society of Edinburgh, acting as a member of its council in 1843–5. In 1840 the University of Glasgow conferred on him the honorary degree of LLB. The emperor of Russia and the kings of Prussia and the Netherlands presented him with medals in acknowledgement of his merit as a lighthouse engineer. Dr John Brown wrote that Stevenson had genuine literary genius, that he was able to read Italian and Spanish critically and with ease, and that he knew Homer by heart and read Aristophanes in Greek. Clarity and style characterize his writings. In addition to the publications already mentioned Stevenson contributed papers to the *Edinburgh New Philosophical Journal* and in 1851 his biographical sketch of his father was published (illustrated edn, 1861).

In 1852 Stevenson was seized with paralysis, and in the following year he resigned as engineer to the Northern Lighthouse Board. He beguiled his suffering in retirement by translating the ten hymns of Synesius, bishop of Cyrene AD 410. These translations, along with other poems, were printed for private circulation in 1865. Stevenson died of general paralysis at his home, 6 Pitt Street, Portobello, on 23 December 1865 and was buried in the new Calton cemetery, Edinburgh. He was survived by his wife and their four children. On 3 January 1866 the Northern Lighthouse Board recorded their deep and abiding regrets for the loss of a man whose services had been to them invaluable and whose works combined profound science and practical skill.

Roland Paxton

Sources

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· d. cert.

Archives

NL Scot., business records of Robert Stevenson & Sons, Acc. 10706

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Wealth at death

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