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(*b*. Norwich, England, October 1776; *d*. 1 March 1862)

mathematics, physics.

Although he was self -educated, Barlow successfully competed for the position of assistant mathematics master at the Royal Military Academy, Woolwich, in 1801. While there he wrote mathematical articles for *The Ladies' Diary* and later for encyclopedias. He also published *An Elementary Investigation of the Theory of Numbers* (1811), *A New Mathematical and Philosophical Dictionary* (1814), and *New Mathematical Tables* (1814), Later known as *Barlow's tables*. The *Tables*, which give the factors, squares, cubes, square roots, cube roots, reciprocals, and hyperbolic logarithms of all numbers form 1 to 10,000, was so accurate and was deemed so useful that a large part of it was reprinted and distributed by the Society for the Diffusion of Useful Knowledge (the last reprint was in 1947).

Barlow's reputation was established with the publication of his *Essay on the Strength and stress of Timber* (1817), the result of experiments he conducted at the Woolwich dockyard and arsenal. He worked with Thomas Telford on the design of the Menai Strait suspension bridge and on the calculation of tides in the Thames as they would be affected by the removal of the old London Bridge. balow was made an honorary member of the Institution of Civil Engineers in 1820.

In 1819 Barlow became interested in the compass deviation caused by the iron in ships. He therefore investigated the action of terrestrial magnetism and conducted a series of experiments on the interaction of iron objects and compass needles. His results, published as *Essay on Magnetic Attractions* (1820), described a method of correcting ships' compasses by use of a small iron plate. For his discoveries in magnetism he was made a fellow of the Royal Society in 1823 and received the Copley Medal in 1825. He also received international recognition and several awards for his contribution to navigation. Barlow was also concerned with electromagnetism and unsuccessfully attempted to make an electric telegraph. Using a magnetic needle, he tried to produce a deflection by means of battery current sent through a length of wire, but the insulation failed.

Around 1827 Barlow became interested in the calculation for the curvature of achromatic object glasses, and in the course of his research he developed a telescope lens consisting of a colorless liquid between two pieces of glass. The "Barlow lens," a modification of his telescope lens, is a negative achromatic combination of flint glass an drown glass.

On several occasions in the 1830's and 1840's Barlow served as a royal commissioner of railroads. He was one of the first to conduct experiments and make calculations on the best shape for rails and the effect of gradients and curves.

BIBLIOGRAPHY

1.Original Works. Forty-nine of Barlow's scientific papers are listed in the Royal Society's *Catalogue of Scientific Papers 1800–1863*, I, 182–184. He edited an edition of D.H. Mahan's *An Elementary Course of Civil Engineering* (Edinburgh–Dublin–London, 1845) and Thomas Tredgold's *Elementary Principles of Carpentry*, 5th ed. (London, 1870).

II. Secondary Works. Articles on Barlow are in *Dictionary of National Biography and Encyclopaedia Britannica* (1911). There is no full-length biography available.

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