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(*b*. Carrickfergus, Ireland, 30 September 1775; *d*. New Brunswick, New Jersey, 10 August 1843)

mathematics.

Adrain was a teacher in Ireland and took part in the rebellion of 1798. With his wife, Ann Pollock, he escaped to America, where he first served as a master at Princeton Academy, then moved to York, Pennsylvania, as principal of the York County Academy. In 1805 he became principal of the academy in Reading, Pennsylvania. From 1809 to 1813 Adrain was professor of mathematics at Queen's College (now Rutgers), New Brunswick, New Jersey, and from 1813 to 1826 at Columbia College, New York, He then returned to Queen's College for a short while. He taught from 1827 to 1834 at the University of Pennsylvania in Philadelphia, where in 1828 he became vice-provost. From 1836 to 1840 he taught at the grammar school of Columbia College, after which he returned to New Brunswick. It is reported that in the classroom he often showed impatience with ill-prepared students. He had seven children, one of whom, Garnett Bowditch Adrain (1815–1878), was a Democratic member of Congress from New Brunswick between 1857 and 1861.

Adrain's first mathematical contributions were in George Baron's *Mathematical Correspondent*(1804), in which he solved problems and wrote on the steering of a ship and on Diophantine algebra. He continued the latter subject in *The Analyst*(1808), a short-lived periodical that he published himself. Here we find Adrain's most interesting mathematical paper, a study of errors in observations with the first two published demonstrations of the normal (exponential) law of errors. Gauss's work was not published until 1809. This volume also contains Adrain's paper on what he calls isotomous curves, inspired by Rittenhouse's hygrometer. If a family of curves (e.g., circles or parabolas) are all tangent at a point *A*, then an isotomous curve cuts these curves at equal arcs measured from *A*. Another article deals with the *catenaria volvens*, the form taken by a homogeneous, flexible, nonelastic string uniformly revolving about two points, without gravity.

Adrain shares with his contemporary Nathaniel bowditch the honor of being the creative mathematician in American Like Bowditch he was an ardent student of Laplace and his paper on errors is in the spirit of Laplace.

Adrain became of a member of the American Philosophical Society in 1812 and six years later he published in its *Transactions* a paper on the figure of the earth in which he found 1/319 as its ellipticity (Laplace had 1/336; the modern value is 1/297). In the same issue of the Transactions he also published a paper on the mean diameter of the earth. Both papers were inspired by Laplace.

BIBLIOGRAPHY

I. Original Works. Adrain's papers include "A Disquisition Concerning the Motion of a Ship Which Is Steered in a Given Point of the Compass," in *Mathematical Correspondent*, **1** (1804), 103–114; "Research Concerning the Probabilities of the Errors Which Happen in Making Observations," in *The Analyst*, **1** (1808), 93–109; "Researches Concerning Isotomous Curves," *ibid*., 58–68: "Investigation of the Figure of the Earth and of the Gravity in Different Latitudes," in *Transactions of the American Philosophical Society*, n.s. **1** (1818), 119–135; and "Research Concerning the Mean Diameter of the Earth," *ibid*., 352–366. He also contributed to *Portico*, **3** (1817); *Scientific Journal and Philosophical Magazine* (1818–1819); *Ladies and Gentle-zman's Diary* (1819–1822); and *The Mathematical Diary* (1819–1822); and *The Mathematical Diary* (1825–1833), of which he edited the first six issues. In addition, Adrain prepared American editions of T. Keith *A New Treatise on the Use of Globes* (New York, 1811): and C. Hutton, *Course in Mathematics* (New York, 1812).

II. Secondary Literature. The most easily available source of information on Adrain is J. L. Coolidge. "Robert Adrain and the Beginnings of American Mathematics," in *American Mathematical Monthly*, **33** (1926), 61–76, with an analysis of Adrain's mathematical work. On his theory of errors, see also O. R. Seinin, "R. Adrain's Works in the Theory of Errors and Its Applications," in *Istoriko-matematicheskie issledovaniya*, **16** (1965), 325–336 (in Russian). An early source is an article in *United States Magazine and Democratic Review*, **14** (1844), 646–652, supposedly written by Adrain's son Garnett. See also G.E. Pettengill, in *Historical Review of Berks County* (*Penna*.), **8** (1943), 111–114; and D.E. Smith, in *Dictionary of American Biography*, I (1928), 109–110.

Coolidge mentions the existence of mansucript material of Adrain's on which M.J. Babb of Princeton was working. These papers seem to have been long after Babb's death in 1945. The Library of the American Philosophical Society has some letters by and concerning Adrain to John Vaughan in Philadelphia, and a letter written to Adrain by M. Roche in 1831.