John Napier
(1550-1617)

John Napier is unique in that he is believed to be the only mathematician in history to have made a significant discovery without recourse to the works of others. Napier's invention of logarithms was of inestimable value to actuaries, astronomers, engineers, navigators, and others needing a fast and accurate means of calculating large numbers. Napier is also credited with popularizing the use of the decimal point.

John Napier was born in 1550 in his ancestral home, Merchiston Castle, near Edinburgh, Scotland. Napier was the son of Sir Archibald Napier and his first wife, Janet Bothwell, the daughter of a burgess. As befitted his station as the eighth laird of Merchiston, John Napier was educated abroad and traveled extensively. There is no record of where or what he studied, but he seems to have been most interested in theology.

Religious matters were uppermost in the minds of many during the political and theological upheaval that followed the initiation of the Reformation in 1517. Like his native Scotland, Napier was a staunch Calvinist. His virulent hatred of the Roman Catholic Church led him to write Scotland's first Bible commentary, *A Plaine Discouery of the Whole Reuelation of Saint John*, published in 1593. This work suggested that the Antichrist of the Book of Revelation was none other than the reigning pope, and urged James VI, the Scottish King, to "purge his house, family and court of all Papists, Atheists and Newtrals." *A Plaine Discouery* was a great success; German, Dutch, and French editions appeared soon thereafter. Napier was gratified by the reception accorded his commentary; to the end of his days, he considered the book his most significant achievement.

Having thus discharged his duty to God, Napier indulged his interest in mathematics. He commenced his study with one specific objective:

> "Seeing there is nothing (right well-beloved Students of Mathematics) that is so troublesome to mathematical practice, nor doth more molest and hinder calculators, than the multiplications, divisions, square and cubical extractions of great numbers, which besides the tedious expense of time are for the most part subject to many slippery errors, I began therefore to consider in my mind by what certain and ready art I might remove those hindrances" (Napier, *Descriptio*).

Napier settled almost immediately on the means of attaining his goal; there were apparently no false starts. All that remained was the monumental task of compiling data. In 1614, after nearly twenty years of laborious calculations, Napier published his *Mirifici Logarithmorum Canonis Descriptio*. In this work, Napier introduced his invention of logarithms. The logarithmic tables appearing in the *Descriptio* reduced every problem of multiplication or division, no matter how complex, to a relatively simple exercise in addition or subtraction.

Napier's discovery of logarithms was received with great enthusiasm, and no wonder! This was a labor-saving device as significant in its day as the computer in ours. Astronomers, whose calculations involved enormous numbers, were especially eager to adopt Napier's method. As the great mathematician Pierre Laplace would later remark, logarithms, "by shortening the labors, doubled the life of the astronomer."

The English mathematician Henry Briggs was astonished by the elegant simplicity and wide-ranging applications of Napier's work. Soon after publication of the *Descriptio*, Briggs met with Napier. After expressing his admiration for Napier's invention, Briggs suggested that the tables be revised and amplified to increase their usefulness. Napier was delighted by Brigg's interest in logarithms and offered his full cooperation and encouragement as Briggs commenced the arduous task of reworking the tables.

Napier applied his characteristic spirit of innovation and practicality to the management of his estate; his cleverness was very nearly his undoing. On one occasion, it is said, Napier was angry with an adjacent landowner whose pigeons were often found to be availing themselves of Napier's grain. Napier sent a message to his neighbor, warning that Napier intended to keep all pigeons he found in his fields from that day on. His neighbor, knowing very well that Napier could never catch a pigeon, agreed. The next morning, the owner of the birds was astonished to see Napier scooping the unresisting pigeons into a sack. Napier had fed the pigeons brandied peas; they were simply too inebriated to fly, but the story circulated that the birds had been bewitched. This, coupled with similar incidents and Napier's fanatical belief in divination and astrology, led many to suspect him of allegiance to the devil. Only *A Plaine Discouery*, his still-popular attack on the Church of Rome, saved him from being hanged as a warlock.

Napier married twice, and fathered twelve children. He died at Merchiston Castle on April 4, 1617, at the age of sixty-seven.

References

Asimov, Isaac. *Asimov's Biographical Encyclopedia of Science and Technology*. Garden City, New York: Doubleday & Company, Inc., 1972.

Ayoub, Raymond. "What Is a Napierian Logarithm?" *The American Mathematical Monthly* 100 (April 1993): 351-364.

Boyer, Carl B. *A History of Mathematics*. 2d ed., rev. Uta C. Merzbach. New York: John Wiley & Sons, Inc., 1991.

Eves, Howard. *An Introduction to the History of Mathematics*. 6th ed. Fort Worth: Saunders College Publishing, 1992.

Gillispie, Charles Coulston, ed. *Dictionary of Scientific Biography*. Vol. IX. New York: Charles Scribner's Sons, 1974.

Hooper, Alfred. *Makers of Mathematics*. New York: Random House, Inc., 1948.

Kasner, Edward and James Newman. *Mathematics and the Imagination*. New York: Simon and Schuster, 1963.