

BOOK REVIEWS

Amar Sodhi

Benjamin Franklin's Numbers: An Unsung Mathematical Odyssey

By Paul C. Pasles, Princeton University Press, 2008

ISBN 13:978-0-691-12956-3; 254+xii pages, US\$26.95

Reviewed by **Jeff Hooper**, Acadia University, Wolfville, NS

Biographies of Benjamin Franklin are not new. He holds a unique place in American history and culture: printer and author, scientist, inventor, philosopher, diplomat, and legend. Who hasn't heard the stories of Franklin's electricity experiments using a wet kite in a thunder storm? His tenure as Ambassador to France occurred at a crucial time in U.S. history, and even into his 80s he served as the President of Pennsylvania. Yet one area in which many historians seem to have paid Benjamin Franklin short shrift is the field of mathematics. The impression given by biographers is that mathematics was Franklin's one glaring weakness. He was indeed once referred to as a "polymath who excelled at everything *except* mathematics."

The central theme of Paul Pasles' book is that historians have done Benjamin Franklin a tremendous injustice. He actually possessed a strong mathematical mind: he was skilled in logical argument and adept at the sort of systematic and creative thinking about numbers, arrangements, and relationships that characterize mathematical thought. He developed an algebra for everyday living, a sort of decision-making technique reminiscent of modern utility theory. His almanac regularly proposed mathematical challenges for his readers. But the most fascinating side to Franklin was his work on recreational mathematics.

Pasles does a thorough job of resurrecting Franklin's mathematical reputation, and this is no simple feat. Pasles returns to primary sources, drawing on Franklin's letters and journals, as well as reconstructions of his library. In doing so Pasles establishes that Franklin not only taught himself basic mathematical skills, but developed a keen sense for recreational mathematics which lasted throughout his long life.

Central to the author's argument are the examples. Franklin has long been known for creating magic squares, and Pasles examines their numerous unusual symmetries, as well as Franklin's ingenious methods for constructing them. This includes in particular some wonderful 8×8 examples (including one newly re-discovered) and even an enormous 16×16 square. Pasles also includes a similar discussion of the incredible symmetries of Franklin's 'Magic Circle of Circles.' Some of these can be viewed at Pasles' website (www.pasles.org) where the author has collected links to additional material and examples. All of these topics are discussed thoroughly, and carefully placed in historical context.

This gem of a book is an excellent addition for anyone interested in recreational mathematics or more generally, the history of science.