BOOK REVIEWS

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Voltaire's Riddle: Micromégas and the Measure of All Things by Andrew Simoson
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Voltaire (1694-1778) is not a name that often comes up in connection with mathematics, except for the fact that he was the lover of Émilie de Châtelet, who wrote about Newton. Best known as a satirist and a quick-witted society figure who occasionally found himself at odds with authority, he is likely now most remembered for his book *Candide*, about the difficulties of an innocent young man in understanding the hypocritical ways of the world. In this unexpected volume, Voltaire's wit is taken as the jumping-off point for a dozen studies in mathematics, physics and astronomy that are accompanied by exercises both mathematical and general. The result is a work that puzzles and sometimes fascinates, representing broad learning and showing connections between mathematics and history that are often illuminating. If it occasionally reaches a bit too far for the beginner, it is on the whole accessible both as a work of mathematics and as one of general learning.

The central conceit of the book arises in trying to understand Voltaire's story *Micromégas*, about a visitor to Earth from Sirius of enormous size. This being, on departing from Earth, offered to the Paris Academy of Sciences a book that contained the answers to "all things", that is, all questions about the nature of the universe. The riddle of Simonson's title arises from the fact that the book, in Voltaire's story, is found to be blank, and one thread connecting the diverse material in the book links possible ways of figuring out why this is so.

But even without that unifying thread, the many different topics – about the shape of the earth, the scale of living beings, trajectories in flatland, the precession of the Earth's poles – share an eighteenth-century concern with the importance of mathematics in understanding the universe. Each topic is introduced by a "vignette" in which historical or literary figures are characters in discussions ranging from the zodiac to space travel. The topics work well for the mathematically inclined exactly because they aren't typical textbook problems. Often the reader will be pushed much farther than in a typical calculus book, and one skill that the book will develop is a patience for working one's way through some complicated (yet mostly elementary) calculations to get at a question that isn't just a "math book problem". The exercises develop this, and the comments in the back will guide the reader. The exercises go beyond this, however, and pose lots of fresh problems that the *Crux* reader may enjoy. As a sample, find the regular n-gon of radius 5 for which the perimeter is closest to 30. The overall level is roughly second year university, with a certain amount quite accessible to a good high school student. One of the MAA's Dolciani Mathematical Expositions, Simoson's unusual and entertaining book does what many books in that series do: take mathematics in an unusual direction that broaden our notions of what the subject can be.