IN DARWIN'S SHADOW: The Life and Science of Alfred Russel Wallace.
By Michael Shermer. Oxford Univ. Press. 422 pp. $35

Casual students of biology know that in 1858 Charles Darwin received a letter from a naturalist named Alfred Russel Wallace which described independently some of the general ideas of evolution and natural selection that Darwin was about to make famous. And that's about *all* that most students know. History has placed Wallace (1823–1913) in the role of evolution's second banana. Shermer's thorough and intelligent account makes Wallace's originality clear, while leaving no doubt that history has, on the whole, judged him rightly.

Darwin had family money to support his famous voyage on the *Beagle* and his subsequent thinking and writing. Wallace, born poor, lived hand to mouth most of his life, financing long travels in South America and the Malay Archipelago by collecting novel specimens to sell in London. Later he made a precarious living by writing, but his interests were always more intellectual than commercial. In the Far East he was struck by the way butterflies and other creatures showed a vast range of tiny variations across the islands. While laid up with malaria, he recollected Malthus and saw how the struggle for existence, acting on the endless variations he had observed, would lead to natural selection. In modern terms, the survival of the fittest drives the evolution of species. This is what Wallace wrote about to Darwin.

Shermer's level-headed analysis gives Wallace due credit even as it persuasively debunks conspiracy theories holding that Darwin connived with the London scientific establishment to usurp the younger man's place in history. In fact, Darwin helped publicize Wallace's work, and was impelled by it to hurry up and finish his *Origin of Species* (1859), on which he had been working for many years. Darwin acknowledged Wallace's independent thought, and Wallace acknowledged Darwin's priority. They remained on friendly terms.

Back in England, Wallace never became part of the inner circle of British scientists. He came to think that natural selection could not account for human intelligence, and he got caught up in the late-Victorian craze for phrenology and spiritualism, which diminished his scientific reputation.

At this point in his account of Wallace's life, Shermer, the author of *Why People Believe Weird Things* (1997), embarks on a rather different book. Eager to make his history scientific, he offers statistical analyses of Wallace's writings, along with psychological assessments, on a numerical five-factor scale, of his subject's personality. He concludes, in brief, that Wallace was a natural heretic—a bit of a sucker for radical ideas and hopeless causes, with an innocence that verged on gullibility.

Shermer spends far too much of the book trying to justify, with limited success, his quantitative methods. He seems to believe that once he has found a way of attaching a number to something, he has hit on objective truth, and that whatever cannot be measured numerically is of meager value. Nevertheless, his emphasis on understanding Wallace's science and beliefs through his individual psychology stands in welcome contrast to the approach taken by most academic historians of science, who aim to reduce original thinkers to anonymous blobs of gray matter responding to sociological forces that only the historians have the wit to perceive.

Shermer is an enthusiastic if raggedy writer, and his book, idiosyncrasies included, gives a compelling and fair assessment of a man too often overlooked.

—David Lindley

MATHEMATICS ELSEWHERE: An Exploration of Ideas Across Cultures.
By Marcia Ascher. Princeton Univ. Press. 207 pp. $24.95

I'm probably not the only one who's going to throw an "End of the World" party on December 21, 2012, the day that the 5,125-year cycle of the Mayan "long count" calendar ends. The Maya themselves never thought that the end of the long count would mark the end of the world, but some modern New Agers fear the apocalypse when the last hour of the last day on the Mayan calendar ticks away.

Whereas the Western calendar (like most other modern calendars) is linear—the numbered years get greater and greater without end—the Mayan calendar is cyclical, resetting every 5,125 years. The Maya perceived some-

thing as basic as the passage of time from a totally different viewpoint. In *Mathematics Elsewhere*, Ascher, a professor emerita of mathematics at Ithaca College, seeks to enter the mathematical mindsets of other cultures through the Mayan calendar, the Marshall Islanders' intricate maps, the Tongan system of social ranking, the ornate flour figures that Tamil women would draw on their thresholds, and a number of other customs. The result is both fascinating and frustrating.

At times, the book provides a compelling glimpse into another civilization. For example, one chapter describes how the Marshall Islanders, who live on tiny islands scattered across a million square kilometers of the Pacific, were able to navigate vast stretches of seemingly featureless ocean. Ascher delves deeply into the islanders' once-mysterious methods, including the frail-looking frameworks of palm ribs lashed together with coconut fibers that guided canoes from island to island, and the training of the navigators (lying in their outriggers, they learned to sense the interplay of wind, water, and land).

By depicting "some mathematical ideas of people in traditional or small-scale cultures," Ascher aims to contribute to "a global and humanistic history of mathematics." But while the practices in the book are describable by mathematics, there is, with few exceptions, little evidence that they reflect a different type of mathematical thought than Westerners'. Just because Marshall Islanders represented ocean swells rather than physical distances on their maps doesn't mean that they had a fundamentally different view of relationships in space, nor does our ability to represent Tamil drawings by a mathematical formalism known as an "L-system" mean that Tamil matrons implicitly understood formal systems and recursive algorithms.

When there *is* a clear mathematical conclusion to be drawn—for example, that the Maya used zero some centuries before it appeared in Europe—Ascher curiously shies away from it. This is particularly disappointing because the Mayan and other calendars give her the strongest case for seeing a different type of mathematics in another culture—cyclical calendars may have forced a few cultures' timekeepers to explore rudimentary ideas in mathematical group theory, a subject that didn't captivate the West until later.

Despite the weak mathematics, *Mathematics Elsewhere* provides interesting snapshots of different cultures. Perhaps it should have been titled simply *Elsewhere*.

—Charles Seife

History

PARIS 1919: Six Months That Changed the World.
By Margaret MacMillan. Random House. 570 pp. $35

Occasionally an anecdote—such as the tale of Napoleon dousing himself daily in eau de cologne because he feared baths—casts intriguing new light on an event or a time we thought we knew. MacMillan, a professor of history at the University of Toronto, offers many such stories in this history of negotiations toward the Treaty of Versailles that ended World War I. One day, for example, Olwen Lloyd George, the attractive young daughter of British prime minister David Lloyd George, was invited to go for a drive with French premier Georges Clemenceau, a fiery old socialist nicknamed the Tiger. In the course of their excursion, Clemenceau turned to Olwen and asked whether she appreciated art. Indeed, she replied, whereupon the old rogue whipped out a batch of naughty photos.

As that story reminds us, the Treaty of Versailles was not just an abortive attempt to bring peace to a devastated Europe. Nor was it simply an attempt by President Woodrow Wilson, with his Fourteen Points and League of Nations, to bring American fairness and decency to the squalid deal making of discredited European empires. It was also a bridging event that took Europe from the moral laxities of a bloody war into the Jazz Age.

"Elsa Maxwell, not yet the doyenne of international café society that she would become, secured a passage from New York as companion to a glamorous divorced woman who was on the