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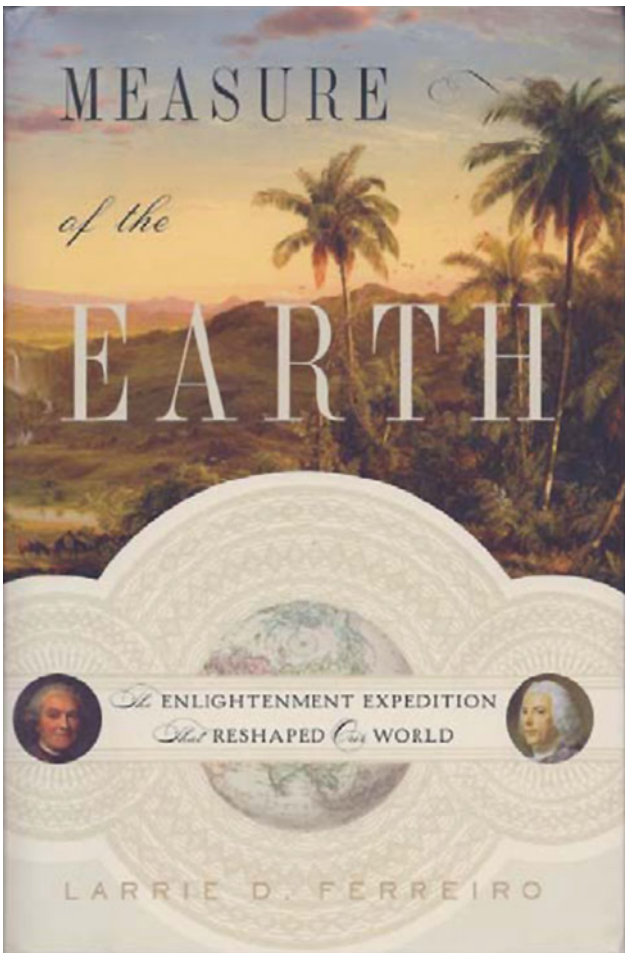
Authors are encouraged to contact their respective editor before submission and will be regularly informed on the review and publication process.

Chris Rizos (Editor)
Pascal Willis (assistant Editor-in-Chief)

1 Book Review

Larrie D. Ferreiro: Measure of the Earth: The Enlightenment Expedition that Reshaped Our World



Title: Measure of the Earth: The Enlightenment Expedition that Reshaped Our World
Author: Larrie D. Ferreiro
Publisher: Basic Books, New York
ISBN: 978-0-465-01723-2
Year: 2011
Price: $28.00
Pages: xix, 353 p., 24 × 16 cm, Illus., Includes bibliographical references and index
Details: Hardback. Available as e-book

So much has been written about the mid 18th century measurement of the meridian arc in the Spanish unexplored lands of colonial Peru (present-day Ecuador) that I was a little apprehensive before I started reading Ferreiro's latest book

of this historical revival. Furthermore, about a decade ago the mathematical discussion of the problem of the Earth's shape during this time period was meticulously covered by the exhaustive treatise written by Greenberg (Soler 1998). Nevertheless, I was pleasantly surprised to discover that *Measure of the Earth*, although addressed to a broad and not necessarily scientific audience, contains enough original substantive information from which even a trained historian in geodesy could profit. The storyline is fluent and engaging and the multitude of vicissitudes that plagued this singular scientific expedition during the apogee of the Enlightenment are richly described and well researched. The preparation of this work was a time consuming journey that bustled the author through libraries and archives of several countries. He explicitly confides to his readers that from conception to completion there was a span of about 20 years dedicated to search and compile the sources before finishing his project. Ferreiro personally consulted libraries in France, Spain, Britain, the United States, Peru, Ecuador and even Chile, the current repository of some of the manuscripts and papers (taken from Peru as spoils of war during their bellicose conflict in 1879–1884), scrupulously uncovering vital material directly related to this fascinating, albeit melodramatic, geodetic enterprise.

Measure of the Earth rekindles the riveting story of the famous scientific undertaking co-sponsored by the government of Spain and the Paris Academy of Sciences that sent to Quito a team of French and Spanish scholars to solve, once and for all, the quest of deciphering if the Earth ellipsoid was prolate or flattened along its polar axis. Ironically, what was planned as the first cooperative international scientific endeavor soon deteriorated into constant intellectual quarrels that exalted the temper of the primary participants to the point of writing independent (but very valuable) scientific and expeditionary reports that reached the bestseller status in their own right. The main objective of this joint effort was to contrast the results gathered in South America with a previously completed measurement of 1° arc length made by Jacques Cassini in France. The equatorial region was selected for obvious reasons to magnify, as much as possible, the differences between the two geodetic calculations that could finally confirm the shape of the Earth and put to rest the acidic dispute colliding the Cartesian and Newtonian philosophies. To their despair, the expeditionary team learned in the field that one of their colleagues (Pierre-Louis Moreau de Maupertuis), by measuring the length of a 1° arc in the cold regions of Lapland north of the Gulf of Bothnia, had already solved the scientific puzzle. This occurred long before they were able to wrap up their own conclusions, thus stealing from them overnight a resound scientific victory and a dreamed accomplishment of universal glory.

The principal characters of this saga were notorious scientists with familiar names such as the French academicians Louis Godin, Pierre Bouguer, Charles-Marie de La Condomine, and the Spanish naval officers Jorge Juan y Santacilia and Antonio de Ulloa y de la Torre-Guiral. Their entourage was completed by another group of supportive participants: one doctor and botanist, one surgeon, one instrument maker, one engineer and cartographer, one draftsman, and two assistants. The book narrates masterfully the interaction between all of these protagonists and provides a colorful detailed description of the tense, sometimes hysterical, clash of personalities between these supposedly well-educated scientists, all intertwined with the extreme hardships that they endured while trying to achieve their intended geodetic ambition. The story is exhilarating at times and plainly demonstrates that scientific paradigms have not changed much in about 300 years: worthy research requires original ideas, concentration, perseverance and a good amount of luck and money.

There is a wealth of carefully assembled references compacted into 37 pages at the end of the book. To facilitate understanding for non-polyglot readers, the author painstakingly translated every single title, mainly from French and Spanish, into English. In the opinion of the reviewer, this is one of the most complete sets of annotated references ever published in the English literature connected to this mission and the pulsating lives of its players. However, perhaps it was unnecessarily redundant information to repeat the full title and its translation in the list of notes in every chapter. The same abbreviations used within chapters would have sufficed.

Some vocabulary shortcomings appear in the text. One concerns the mistaken nomenclature employed by the author that systematically uses the adjective "geodesic" (e.g. Geodesic Mission, geodesic measurements, geodesic survey, etc.) instead of its correct acceptance "geodetic". Ferreiro explicitly recognizes this peculiar mix-up although, he makes things worse by stressing in a short "Note on Language" (probably added shortly before releasing the volume) that he has "consciously" selected this inaccurate terminology. This explanation is bizarre to say the least and utterly inconsistent with every single English reference cited by the author at the end of his book. To avoid any needless confusion it is imperative that the author pertinently corrects this misnomer in any prospective future editions. Similarly, the proper spelling of the derogatory word used by the native population of colonial Spain to designate Spanish peninsular immigrants settling in the viceroyalty is *chapetón*, with plural *chapetones*; both words are wrongly misspelled every time that this idiosyncratic social rank is alluded to.

In spite of those quibbles, the narration and handling of this thrilling scientific adventure is enlivening and historically

informative. Its chronicler deserves recognition for a work well done. I emphatically recommend this excellent book to any reader mesmerized by travel and adventure amid the intrigue of the most celebrated geodetic (not geodesic) expedition of all times.

Tomás Soler
National Geodetic Survey

Reference

Soler T (1998) Book Review: Greenberg, John Leonard. *The Problem of the earth's shape from Newton to Clairaut*. Cambridge University Press, 1995. xviii+781 p. J Geod 72(3):183–184. http://www.springerlink.com/content/rmve143214qe5vc2/fulltext.pdf (August 2011)