BOOK REVIEWS | NOVEMBER 01 2024

A Review of *Coulomb's Memoirs on Torsion, Electricity, and Magnetism Translated into English*

Coulomb's Memoirs on Torsion, Electricity, and Magnetism Translated into English. , by Andre Koch Torres Assis and Louis L. Bucciarelli, published by C. Roy Keys Inc. (2023), 546 pp. ISBN-10: 1987980336

Check for updates

Phys. Teach. 62, 684 (2024)
https://doi.org/10.1119/5.0173852

A Review of *Coulomb's Memoirs on Torsion, Electricity, and Magnetism Translated into English*

Mario J. Pinheiro, Universidade de Lisboa Instituto Superior Tecnico, Lisboa, Portugal

Coulomb's Memoirs on Torsion, Electricity, and Magnetism Translated into English, by Andre Koch Torres Assis and Louis L. Bucciarelli, published by C. Roy Keys Inc. (2023), 546 pp. ISBN-10: 1987980336

Coulomb's Memoirs on Torsion, Electricity, and Magnetism presents an insightful and groundbreaking investigation of magnetism and the behavior of magnetic fluid. As a practicing physics teacher, I found this book remarkably useful and interesting for both teachers and students. The editorial effort by Andre Koch Torres Assis and Louis L. Bucciarelli has been monumental in bringing this English translation to fruition. Not only have they provided accurate translations, but their introductory essays and editorial notes throughout the book offer invaluable insights into Coulomb's work. Assis's dedication to preserving the integrity of Coulomb's experiments, alongside Bucciarelli's extensive commentary, ensures that readers gain a full understanding of the historical and scientific significance of these memoirs.

Andre Koch Torres Assis and Louis L. Bucciarelli are distinguished researchers and scientists who have made significant contributions to the academic community in the fields of physics and the history of science, particularly in relation to the work of Charles-Augustin de Coulomb. Andre Koch Torres Assis is a Brazilian physicist and historian of science. He has a strong interest in the history of physics and has devoted much of his academic career to uncovering and illuminating the works of important researchers of the past. Assis is known for his knowledge of the life and contributions of Charles-Augustin de Coulomb, and his study focuses on the history of electromagnetics. Louis L. Bucciarelli, in turn, is a renowned historian of engineering and technology. He was a professor at the Massachusetts Institute of Technology and played a crucial role in promoting the study of the history of technology. His collaboration with Assis brought together their expertise in various fields and created a coherent and comprehensive approach to the study of Coulomb's work.

To find real artifacts associated with the work of Charles-Augustin de Coulomb, Assis and Bucciarelli collaborated on this new book, conducting intensive research and archival studies. They have delved into historical documents, original manuscripts, and primary sources, meticulously piecing together the puzzle of Coulomb's scientific achievements. Their combined efforts have led to the publication of remarkable papers, memoirs, and books that present Coulomb's pioneering experiments and theories while providing valuable historical context. Through their exegetical work, Assis and Bucciarelli have enriched the academic community with a deeper understanding of Coulomb's contributions to electromagnetism. They have brought authentic treasures from the past to the forefront, allowing the academic community to appreciate the historical significance and scientific brilliance of Coulomb's contributions to electromagnetism, work that continues to inspire researchers and educators to delve into the rich history of science and draw meaningful insights from past discoveries.

The memoir begins with a meticulous examination of how to calculate the magnetic moment of a magnetized needle when the density of the magnetic fluid varies linearly along its length. Coulomb's attention to detail and systematic approach makes it easy for the reader to grasp the complexity of the subject. The book's extensive use of illustrations and diagrams, as well as its systematic use of equations to fully grasp the physics, revised to enhance understanding, illustrates Coulomb's mastery of explaining complicated concepts. One of the highlights of this memoir is the experimental determination of the forces that bring various magnetic needles, magnetized to saturation, back to their magnetic meridian. Coulomb presents a series of experiments, each with clear explanations and results, enabling educators to easily reproduce and demonstrate these phenomena in the classroom. Throughout the book, we see how Coulomb emphasized the importance of rigorous experiments and precise measurements. This emphasis is consistent with contemporary classroom practice and encourages teachers to incorporate hands-on activities and experiments to actively engage students in learning.

Coulomb's work also provides valuable insights into magnetism in various materials, especially steel blades and rods. The experiments designed to impart the highest degree of magnetism to these materials are thoroughly documented, and the results are well presented. In introductory physics courses, these experiments can serve as engaging demonstrations that pique students' curiosity and foster their interest in the subject. As a practicing teacher, I found Coulomb's memoirs to be a treasure trove of ideas and research-based strategies. The clarity of the explanations, coupled with practical applications of magnetic principles, makes the book an excellent resource for educators who want to enrich their physics classes with engaging and relevant content. While some concepts in the memoir require further elaboration or contextualization for introductory-level students, the overall organization and presentation of the material make it accessible for educators to adapt and convey the essence of Coulomb's seminal work.

In summary, Assis and Bucciarelli's collection and discussion of the physics content of Coulomb's memoir is a seminal work of scientific literature that offers valuable insights into magnetism and the behavior of magnetic fluid and helps us understand the rich literature on the emergence of ideas in the field of physics. Its practicality and relevance in the field of introductory physics make it an engaging and insightful read for teachers and students. A valuable addition to the literature on magnetism, this collection of memoirs holds immense potential to inspire a new generation of physics enthusiasts and ignite their passion for the wonders of electromagnetism.

***TPT* is seeking a "Book Reviews" Editor:** *We are looking for applicants with a background in physics teaching who like to read, like writing about what they read, and are willing to contact other writers for reviews. Send an email to the editors at tpt@aapt.org if you are interested.*

 DOI: 10.1119/5.0173852