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★**The complex itinerary of Leibniz's planetary theory.**
Physical convictions, metaphysical principles and Keplerian inspiration.
With a foreword by Eberhard Knobloch.
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Gottfried Leibniz's investigation of planetary motion was contained in an article published in 1689 in the journal Acta Eruditorum. Stimulated by his reading of Isaac Newton's *Principia mathematica* (1687), Leibniz developed a theory of planetary motion based on vortex motion, in which a planet is moved about the sun in an ethereal whirlpool. Leibniz immediately elaborated on his results in two papers that were only made public in the nineteenth century. There were also references to his theory in some of his papers published at the time.

Leibniz's theory was something of a disappointment and stands in contrast to his remarkable contributions to the new differential and integral calculus. His article elicited only a limited reaction among eighteenth-century researchers, while modern historically minded physicists seem to have found it of fairly limited interest. The study of Leibniz's planetary theory has been largely confined to historians over the past seventy years engaged in developing a more detailed understanding of the reception of Newton's *Principia* and of contemporary ideas about force and planetary motion, and of how the infinitesimal calculus was deployed to study these phenomena. Of particular concern is having an accurate historical picture of the vortex theory of planetary motion—the Cartesian alternative to Newton—and Leibniz's contributions to it. The book under review is the latest addition to this scholarly project.

The underlying idea of Leibniz's planetary dynamics consisted in trying to derive basic results about central-force motion from Newton's *Principia* using a vortex model that avoided the Newtonian concept of centripetal force. Paolo Bussotti focuses on an unpublished follow-up paper that Leibniz wrote to his 1689 article in which he filled out some of the details that were omitted in the published account and provided more complete mathematical demonstrations. While Leibniz's account is rather complicated and from a certain point of view may even seem artificial, Bussotti believes he arrived at something of real interest and significance. Bussotti states (p. 26): "These sets of results show that Leibniz's knowledge of the kinematical aspects of the planetary motions were profound and that he was an original thinker, as to this subject." Particularly noteworthy are the ways in which Leibniz applied his calculus of infinitesimals in developing the theory.

A subsequent chapter is devoted to Leibniz's concept of inertia, while another examines Leibniz's later planetary theory presented in an unpublished work from 1706. In the fifth chapter the author examines in more depth Leibniz's conception of gravity and its relation to his theory of planetary motion. The final chapter provides a detailed account of Leibniz's engagement with the physical approach to planetary motion advanced by Johannes Kepler, as well as the more general influence of Kepler on Leibniz's metaphysics.

The historical interest of Leibniz's planetary theory remains high, and Bussotti has made a determined effort to convey its technical content in both the published and unpublished sources. His book will be a standard source for understanding ethereal physics and the reception of Newton's dynamics at the end of the seventeenth century. The fascination of the material is evident in the detailed exposition provided by the author. The book also breaks welcome new ground in documenting the influence of Kepler on Leibniz.

Craig G. Fraser