John von Neumann: selected letters.
With a foreword by P. Lax and an introduction by Marina von Neumann Whitman.
Edited and with a preface and introductory comments by Miklós Rédei.
History of Mathematics, 27.

This book presents the reader with a selection of letters written by John von Neumann. It is intended as a contribution to a broader understanding of von Neumann the scientist, the public figure, and the man. The letters to 69 different correspondents vary in contents and in style. The spectrum of topics discussed is very broad. They include, among others, very technical topics in mathematics and in mathematical physics, suggestions to a Standard Oil executive on a logistic problem related to worldwide operations of oil tankers, remarks to the editor of the Washington Evening Star on a misleading article published in that journal on aerial bombing methods, and explanations about the kind of practical tasks that high-speed computers could help to solve. Introductory comments written by the editor are highly useful for reading these letters within the proper historical context, and more generally, for getting a broad picture of von Neumann’s always astonishing horizon of scientific achievements. A brief introduction by von Neumann’s only daughter, Marina von Neumann Whitman, adds an illuminating perspective on the personal side of the story. The introductory comments cover the following fields: 1. Von Neumann’s life and career in light of his letters; 2. Logic and foundations of mathematics; 3. Operator algebras; 4. Unbounded operators; 5. Quantum mechanics [5.1. Mathematical foundations of Hilbert space quantum mechanics; 5.2. Uniqueness of the Schrödinger representation of the canonical commutation relation; 5.3. Correlations between spatially separated quantum systems; 5.4. Relativistic quantum mechanics]; 6. Quantum logic; 7. Ergodic theorem; 8. Computer science; 9. Game theory.

Of the many interesting examples that could be brought up here, I mention two letters to Kurt Gödel in late 1930–early 1931. Von Neumann had attended the 1930 conference in Königsberg where Gödel announced the proof of his first incompleteness theorem. Unlike many others, von Neumann immediately understood the deep significance of this result and very soon came up with the so-called second Gödel theorem for which he apparently had a proof. From his correspondence we understand that von Neumann realized that Gödel also had reached this result and thus decided not to publish his own. Other letters in the collection indicate that, although von Neumann developed views on the foundations of mathematics that sensibly differed from those of Gödel, his admiration for the man remained unchanged. Von Neumann’s very extensive range of interests touched on many different fields of pure and applied mathematics. He was actively involved in very influential institutions, such as the Atomic Energy Commission and the Institute for Advanced Studies. He served as advisor in various ways to the military and political establishment in the USA. His work on the design of the modern digital computer was of lasting impact. No doubt, the story of his life and works offer a most important subject of historical research. Such research is actually just in its early phases. Some historical work on von Neumann and his scientific world has been done so far, and this is duly listed in the bibliography of this collection. The publication
of the collection under review here provides, no doubt, an additional, very significant
collection for any future research on von Neumann himself and the impact of his
research, as well as on some more general questions about the history of science in the
first half of the twentieth century and in the years immediately following World War
II. This book will appeal to anyone with an interest in the history of science in the
twentieth century.

{For additional information pertaining to this item see [E. C. Lance, Bull. Lond.
Math. Soc. 40 (2008), no. 6, 1096–1098; MR2471960].}

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Current version of review. Go to earlier version. Leo Corry

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