

REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the American Mathematical Society classification scheme. The 1991 Mathematics Subject Classification can be found in the annual subject index of *Mathematical Reviews* starting with the December 1990 issue.

13[01A60, 01A70, 68-03].—WILLIAM ASPRAY, *John von Neumann and the Origin of Modern Computing*, History of Computing, The MIT Press, Cambridge, MA, 1990, xvii+376 pp., 23½ cm. Price \$35.00.

By 1943, when he first became interested in computational mathematics, John von Neumann had established an international reputation based on original contributions to operator theory, logic, game theory, mathematical economics, and the mathematical foundations of quantum mechanics.

Biographical details prior to that time are presented in the opening chapter, providing the background for a fully documented, copiously annotated account of his abbreviated career in computer science. During that period, spanning slightly more than a decade, von Neumann organized the Electronic Computer Project at the Institute for Advanced Study and made lasting contributions to the theory, design, construction, and application of digital computers. Modern numerical analysis may be traced to his critical examination of methods for solving large linear systems, his development of Monte Carlo methods in collaboration with Stanislaw Ulam, as well as his research in linear programming methods and the numerical solution of partial differential equations arising in studies of fluid dynamics.

Also described in detail is his pioneering work with others in the application of computers as a scientific tool in diverse fields that include astrophysics, numerical meteorology, atomic and nuclear physics, biological information processing, and cybernetics.

A concluding chapter describes von Neumann's unabated activity after 1945 as a consultant to both government and industry in areas outside computing. This part of his career is conveniently summarized chronologically in a table that also includes a listing of his numerous awards, honors, and society memberships.

Appended to the text is an extensive set of explanatory and supplementary notes (83 pages) followed by a general bibliography of 346 items consisting of works cited in the text or used directly in its preparation, and finally a list of 190 writings authored or coauthored by von Neumann.

This meticulously researched, carefully written, and well illustrated book is indeed a fitting literary tribute to the enduring accomplishments of a remarkable man and his associates.

J. W. W.

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