the authors' most significant results, Theorem 12 of *On strong product integration* (Journal of Functional Analysis, vol. 28), was not included. This theorem, in which equation (1) is solved when the operators $A(t)$ are generators of contraction semigroups on a Banach space, notably simplifies and generalizes previous results of Kato and Yosida and would have fit nicely into Chapter 3.

MICHAEL A. FREEDMAN

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Nonnegative matrices in the mathematical sciences, by Abraham Berman and Robert J. Plemmons, Academic Press, New York, 1979, xviii + 316 pp., $32.00.

Matrices with nonnegative entries occupy a very special niche in matrix theory, because of their natural importance in a wide variety of applications and because of a long list of very aesthetic mathematical properties, which, among other things, establish their role as a natural generalization of nonnegative real numbers (along side positive semi-definite matrices). Important properties are still being discovered, and, typical of much of modern research in matrix theory, the work often involves an attractive marriage of algebra, analysis, combinatorics, and geometry. It is neither primarily linear nor primarily algebraic. In addition, the properties and applications of nonnegative matrices inspire an array of generalizations both inside and outside of the finite dimensional setting.

The most fundamental facts about nonnegative matrices, established by Perron [**5**] and Frobenius [**1**] about 70 years ago, are mathematically difficult enough that, despite their extreme importance, they do not generally find their way into even advanced undergraduate matrix theory courses. (This is in part due to the fact that a rigorous author considering a chapter in a book for such a course faces a difficult choice between a long drawn out proof or the use of external tools—or no chapter.) Since there are regrettably few graduate courses in matrix theory, the number of serious expository treatments of the subject is sadly limited (to a few survey papers and a few brief book chapters, all showing signs of age, and Seneta's 1973 book [**6**] which is highly specialized). The standard sources until now have been [**2, 7, 8, 9**], the most recent of which is nearly 20 years old. This is doubly unfortunate because there is a significant number of applied topics whose fundamental features are essentially obvious, given just a knowledge of the more basic theory of nonnegative matrices (such as elementary Markov processes, input-output analysis, parts of stability analysis and iterative methods, two-person zero-sum game theory and linear programming). Thus, it is fair to say that a comprehensive book on the subject was long overdue.

The book under review satisfies a good portion of the existing need, and the authors have done the mathematical and applied community a service in preparing what will be a standard reference for several years. But like any