The authors and editors succeed admirably in achieving the goal mentioned. Naturally, the theoretical discussion is mainly limited to results and glimpses of proofs, but adequate references are always given. Frequently, the discussion is very elucidating. Hints as to "best algorithms" are often given.

The different chapters are well integrated towards a whole (only occasionally are forward references found), but they can also be read independently by a reader with a modest background.

A good bibliography and a subject index add to the value of this book.

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23 [5.00].—W. E. FITZGIBBON & H. F. WALKER , Editors, *Nonlinear Diffusion,* Pitman Research Notes in Mathematics, Pitman Publishing Ltd., London, 1977. Price £7.50.

These notes constitute the lectures of the participants of the NSF—CBMS Regional Conference on Nonlinear Diffusion held at the University of Houston in June, 1976. The lectures of the principal speaker, D. G. Aronson, are to be published by SIAM in the CBMS Regional Conference Series in Applied Mathematics.

Over the last twenty years, there has been an ever increasing recognition on the part of physical scientists of the inadequacy of classical linear diffusion theory as a tool for predicting experimental observations.

Thus, it has become necessary to include previously neglected (or small) nonlinear terms in the mathematical modeling of many observed phenomena. As is usually the case, the physical problems have again provided mathematicians with a rich variety of research questions.

The present set of notes includes lectures of interest both to mathematicians and to applied scientists. For want of a better way to provide an overview of these notes, we have divided the articles into two rough classes: those of primarily a theoretical nature and those that would be of more interest to applied scientists. Naturally, this classification is based on the reviewer's own personal prejudices and he offers, in advance, his apologies to any of the authors who might feel that their work has been placed in the wrong class. Since this is a loose classification and since people have varying interests, some theoreticians will find the applied articles of interest and conversely, some experimentalists will find the theoretical articles relevant to their needs.

Among those articles of a theoretical nature are the following:

1. D. G. Aronson, The Asymptotic Speed of Propagation of a Simple Epidemic.
2. E. D. Conway and J. A. Smoller, Diffusion and Classical Ecological Interactions: Asymptotics.
3. P. C. Fife, Stationary Patterns for Reaction Diffusion Equations.
4. D. Henry, Gradient Flows Defined by Parabolic Equations.
5. R. M. Miura, A Nonlinear WKB Method and Slowly Modulated Oscillation in Nonlinear Diffusion Processes.
6. P. Nelson, Subcriticality for Submultiplying Steady State Neutron Diffusion.

7. M. E. Schonbek, Some Results on the Fitzhugh-Nagumo Equation.

The articles of a more applied nature, including the numerical aspects of diffusion theory are:

1. J. R. Cannon and R. E. Ewing, Galerkin Procedures for Systems of Parabolic Partial Differential Equations Related to the Transmission of Nerve Impulses.
2. J. W. Evans, Transition Behavior at the Slow and Fast Impulses.
3. N. J. Kopell, Waves, Shocks, and Target Patterns in an Oscillating Chemical Reagent.
4. J. Rinzel, Repetitive Nerve Impulse Propagation: Numerical Results and Methods.
5. A. D. Snider and D. L. Akins, Calculations of Transients for some Nonlinear Diffusion Phenomena.

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24 [7.30].—RALPH HELLER, 25D *Table of the First One Hundred Values of* $j_{0,s}$, $J_1(j_{0,s})$, $j_{1,s}$, $J_0(j_{1,s}) = J_0(j'_{0,s+1})$, $j'_{1,s}$, $J_1(j'_{1,s})$, Department of Physics, Worcester Polytechnic Institute, Worcester, Massachusetts, 1976. Ms. of six pages deposited in the UMT file.

This is an attractively arranged, definitive table of the first 100 zeros of the Bessel functions $J_0(x)$, $J_1(x)$ and of their first derivatives, $J'_0(x)$ and $J'_1(x)$, together with the associated turning values of $J_0(x)$ and $J_1(x)$ and the values of $J_1(j_{0,s})$, all to 25 decimal places.

It supersedes, particularly in precision, all previous related tables, such as those of Meissel (as reproduced in Gray, Mathews and MacRobert [1]), the British Association for the Advancement of Science [2], and Gerber [3].

J. W. W.

1. A. GRAY, G. B. MATHEWS & T. M. MACROBERT, *A Treatise on Bessel Functions*, 2nd ed., Macmillan, London, 1922.

2. BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, *Mathematical Tables*, v. 6: *Bessel Functions, Part I*, Cambridge University Press, Cambridge, 1950.

3. H. GERBER, "First one hundred zeros of $J_0(x)$ accurate to 19 significant figures," *Math. Comp.*, v. 18, 1964, pp. 319–322.

25 [10].—JACOB T. B. BEARD, JR. & KAREN I. WEST, *Factorization Tables for Binomials over* GF(q), The University of Texas at Arlington, Arlington, Texas and Mobil Research & Development Corporation, Dallas, Texas, ms. of 42 pp. 8½″ × 14″ + 7pp. 8½″ × 11″, deposited in the UMT file.

The thirteen tables herein give the complete factorization over the Galois field GF(q) of each monic binomial $B(x)$ of degree n, $2 \leqslant n \leqslant d$ as below, such that $x \nmid B(x)$, together with the generalized Euler Φ-function whenever $B(x)$ is not prime and $\Phi[B(x)] < 10^8$. Furthermore, the numerical exponent and the q-polynomial are given for each $B(x)$ whenever $2 \leqslant n \leqslant d_1$. The numerical exponent assigned to a nonprime