special subsets of the complex plane, and to bounds on circles which contain all roots. The authors emphasize that the old methods of Bernoulli, Graeffe, Laguerre, and Lehmer-Schur are not only of historical interest. Weierstrass' iteration for the computation of all roots, which has been rediscovered several times, is treated with care. Bounds on the complexity conclude the text.

The most original part of the book is the contribution on solids, and even if the book were restricted to that alone, it would be worth having it.

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2[65-06, 65Nxx]—*Boundary value problems for partial differential equations and applications*, J.-L. Lions and C. Baiocchi (Editors), Research Notes in Applied Mathematics, vol. 23, Masson, Paris, 1993, xii+460 pp., 24 cm, softcover, F 390

This volume contains 44 papers with a total of 71 authors. The papers were all solicited as a tribute to Enrico Magenes on the occasion of his 70th birthday. Given the reputations of the contributing authors and the great esteem in which the honoree is held among workers in Numerical PDEs, it is no surprise that the papers are of high quality. It is likely that quite a number of these papers will be of interest to many readers of *Mathematics of Computation.*

J.H.B.

3[49-02, 70-08, 70Q05]—*Control and estimation in distributed parameter systems*, H. T. Banks (Editor), Frontiers in Applied Mathematics, vol. 11, Society for Industrial and Applied Mathematics, Philadelphia, PA, 1992, xii + 227 pp., 25 cm, softcover, $56.50

This book is volume 11 in the Frontiers in Applied Mathematics series published by SIAM. It consists of five, primarily review, contributions, each between 40 and 54 pages in length and each with extensive bibliographies.

The contributors and their topics, in order, are

1. J.-L. Lions on "Pointwise control for distributed systems",

2. M. C. Delfour and M. P. Polis on "Issues related to stabilization of large flexible structures",

3. J. S. Gibson and A. Adamian on "A comparison of three approximation schemes for optimal control of a large flexible structure",

4. D. L. Russell on "Mathematical models for the elastic beam with frequency proportional damping", and

5. R. F. Curtain on "A synthesis of time and frequency domain methods for the control of infinite-dimensional systems: a system theoretic approach".

For the most part these articles are independent and treat the formulation of, and analytical questions about, specific classes of control problems. Only the third chapter emphasizes computational questions and methodology. The last four chapters each use various beam equations and models as examples for their analysis. The book provides a good snapshot of the state of the art of these topics at the

time the articles were written, together with useful bibliographies. In particular, the last chapter by Ruth Curtain provides an excellent synthesis and review of a large body of material.

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4[94-01, 94D05]—*The fuzzy systems handbook: A practitioner's guide to building, using, and maintaining fuzzy systems*, by Earl Cox, AP Professional, Boston, MA, 1994, xxxviii + 615 pp., $23\frac{1}{2}$ cm, softcover, $49.95

As a result of highly successful industrial applications of fuzzy systems in the 1990s, primarily in Japan, interest in this area has been rapidly growing during the last few years. This is currently reflected in the large increase of the literature dealing with fuzzy systems and related subjects, including scores of books.

While most books on fuzzy systems currently on the market are edited collections of papers or monographs on special topics, textbooks on fuzzy systems are still in short supply. Since Earl Cox's book is written as a self-contained introductory textbook on fuzzy systems, it fills an important need.

The book is in some sense unique. It is the only book currently on the market that introduces basic concepts of fuzzy set theory, fuzzy logic, and fuzzy systems from the standpoint of practical applications. As suggested by its subtitle, the book is oriented to practitioners. This orientation of the book is very clearly reflected in its style.

In general, the book shies away from mathematics. It teaches by examples and with the help of relevant computer software, which is included in the book on a diskette. Individual topics are introduced along with associated computer programs (properly explained) to allow the reader to develop his or her own hands-on experience with the topic. The book contains 80 code listings along with 401 figures (computer-generated graphs are, unfortunately, somewhat antiquated). In studying the various topics, the reader is constantly reminded of practical applications of the introduced concepts and supporting computer programs.

The book is perfectly suited for self study. When the study is completed, the reader is familiar not only with fundamentals of fuzzy set theory, fuzzy logic, and fuzzy systems, but also with relevant computer software. Moreover, by studying the book, he or she develops a good feeling for practical applicability of these novel theoretical tools.

The material covered in the book is organized into ten chapters. Six chapters cover basic concepts of fuzzy set theory and fuzzy logic, three chapters deal with various issues regarding the development of fuzzy models in industrial and business applications (including the six in-depth case studies), and one chapter is devoted to an overall description of the computer software designed for fuzzy systems modeling. The software is written in the programming language $C++$.

In general, the book is well conceived and well written. Although it is primarily oriented to practitioners, applied mathematicians and computer scientists will find