On the positive side, the book has a detailed table of contents and an extensive index, so it should be easy to use as a reference book.

I can recommend this book as a text for a class of outstanding, well-prepared students. It is also an excellent, up-to-date reference for experts.

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19[65D25]— *Computational differentiation techniques, applicatitons, and tools*, Martin Berg, Christian Bischof, George Corliss, and Andreas Griewank (editors), SIAM, Philadelphia, PA, 1996, xv+421 pp., 25 cm, softcover, $65.00

This is one of the most interesting mathematical books that I have had in my hands for a long time. Its editors have strived to illuminate the ideas and the potential of computational differentiation by assembling a total of 36 contributions from nearly as many authors: each of them points a beam of light on the subject from a special direction, and the fascinating result is the appearance of a rather comprehensive image of this fast-growing, important area of scientific computing. Naturally, this also testifies to the skill of the organizers of the workshop in inviting the right people.

It is impossible to give credit to the individual contributions. Someone having a basic acquaintance with computational differentiation (this slightly wider notion has replaced the original term "automatic differentiation") may pick articles to his or her liking in any order, and will find many which offer interesting and relevant reading. Someone without prior knowledge of the subject should start with an introductory survey article (several of these papers have the appropriate flavor) and then will at least be able to gather an impression of the potential of computational differentiation for his or her own work. Gnerally, the articles maintain a nice balance between readability and technicality.

The volume should greatly help in advertising the important benefits that may be derived from computational differentiation in many areas of scientific computing, and it may help to attract a number of scientists into developping the subject further.

HANS J. STETTER

20[65K10, 90C26]—*Numerica: A modelling language for global optimization*, by Pascal Van Hentenryck, Laurent Michel, and Yves Deville, The MIT Press, Cambridge, MA, 1997, xvii+210 pp., 23 cm, softcover, $25.00

The overall subject area encompassing this book is the numerical solution of nonlinear systems of equations and constrained and unconstrained optimization. More precisely, the book describes certain techniques for finding *all* solutions to nonlinear systems of equations and to finding *global* optima. Until recently unrecognised by many researchers in the field, such computational methods both provide mathematical rigor and are applicable to many practical problems. The authors have a commercial implementation, ILOG Numerica, that embodies both their own variants of these methods and a modeling language to interface well with the methods