ceive only four pages each, and in Chapter 8, where "conceptual algorithms" abound. This would be a much better book if it devoted more attention to fewer topics, especially if those topics coincided better with O'Rourke's interests. The marked contrast between the author's obvious enthusiasm for clever mathematical ideas and his apologetic tone in explanations of code suggests that he might have done better to omit most of the programs altogether, while taking more care over the mathematical details.

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1. H. Edelsbrunner, *Algorithms in combinatorial geometry*, EATCS Monographs on Theoretical Computer Science, Springer, Berlin, 1987.
2. K. Mehlhorn, *Data structures and algorithms. Vol.* 3: *Multidimensional searching and computational geometry*, EATCS Monographs on Theoretical Computer Science, Springer, Berlin, 1984.
3. F. P. Preparata, *Computational geometry: an introduction*, Texts and Monographs in Computer Science, Springer, New York, 1985.

13[43-06, 43A32, 43A70, 42C15].—LARRY L. SCHUMAKER & GLENN WEBB (Editors), *Recent Advances in Wavelet Analysis*, Wavelet Analysis and Its Applications, Vol. 3, Academic Press, Boston, MA, 1994, xii + 364 pp., $23\frac{1}{2}$ cm. Price $59.95.

This is an important collection of papers by a truly distinguished group of contributors, and it should be in the hands of anyone who may be trying to keep abreast of the frantic activity in wavelet theory. All ten papers provide discussions in depth of the topics they address; they range in length from 22 to 62 pages.

In the first paper, Andersson, Hall, Jawerth, and Peters explore orthogonal and biorthogonal wavelets on prescribed subsets of the real line. A new concept of "wavelet probing" is introduced, and there are applications of wavelets to boundary value problems for ordinary differential equations. In the second paper, Auscher and Tchamitchian construct wavelet bases for elliptic differential operators in one dimension. These lead to estimates of the corresponding Green's kernel. Along the way, they create an extension of the multiresolution theory. In the third paper, Battle identifies the wavelets associated with Wilson's recursion formula in statistical mechanics. He then uses them to refine the formula. In the fourth paper, Benassi and Jaffard study a class of Gaussian random fields by means of wavelet decomposition. This work has applications in the theory of Brownian motion. In the fifth paper, Chui and Shi introduce multivariate wavelets in which the scaling (dilation) is different in each dimension, or, more generally, is defined by any nonsingular linear map. This innovation opens the possibility of constructing Riesz bases for multivariable functions using only a single function, together with the generalized notion of dilation and the usual translation by multi-integers. In the sixth paper, Dahmen, Prössdorf, and Schneider develop numerical schemes of the Petrov-Galerkin genre with trial spaces generated by a single scaling function. These schemes are applicable to a large class of pseudodifferential equations, and the authors discuss error estimates pertinent to that application. In the seventh paper, Daubechies discusses wavelet bases on an interval and the interaction of wavelets with the differentiation operator. At issue in the first topic is how to avoid edge effects when a wavelet basis on the line is restricted to an interval. In the second topic, the question is how to compute the derivative of a function efficiently from its wavelet decomposition. In the eighth paper, Donoho analyzes smooth wavelets whose dual bases consist of characteristic functions of intervals. He discusses the characterization of smoothness classes using such wavelet transforms. In the ninth paper, Flandrin and Gonçalvès study bilinear extensions of the wavelet transform. They explore the relation between time-scale and time-frequency energy distributions. In the final paper, Goodman, Micchelli, and Ward investigate spectral radius formulas for subdivision operators. They find related finite-rank operators with the same spectral radius. The rank of this associated operator depends only on the length of the mask in the subdivision operator and on the dimension of the underlying ambient space.

Each paper has a valuable bibliography, and the book has a subject index.

E. W. C.

14[28-00, 65D30].—DANIEL ZWILLINGER, *Handbook of Integration*, Jones and Bartlett, Boston, MA, 1992, xvi + 367 pp., $23\frac{1}{2}$ cm. Price $49.95.

This book is a compilation of methods for dealing with integrals appearing in science and engineering problems. It starts with two introductory chapters, one on applications of integration and one containing concepts and definitions. This chapter closes with several sections on the transformation of integrals which is one of the more useful tools in evaluating integrals, both analytically and numerically. Chapter III discusses exact analytical methods, among them the use of computer packages which include a symbolic integrator. The next chapter on approximate analytical methods discusses among other techniques, asymptotic expansions, Laplace's method, stationary phase and steepest descent. The final two chapters are on numerical methods. Chapter V is concerned mainly with the use of Numerical Integration Software while Chapter VI discusses some of the standard numerical integration techniques such as adaptive integration, Clenshaw-Curtis and Gauss-Kronrod rules, cubic splines, lattice rules, Monte Carlo and number-theoretic methods, etc. Each section contains a particular procedure, usually followed by an example, notes and references. The notes are important for the understanding of the main text and sometimes correct inaccuracies therein. They also extend the scope of the text and provide many of the references. The references range from the standard sources to the recent literature.

This book is very uneven. On the one hand, it contains many sections of substance and great practical interest; on the other hand, it contains much trivial and useless material. Thus, the section on the MIT Integration Bee is entirely superfluous, nor could I see much point in the section on integral inequalities, even though it gave an impressive list of such inequalities. The section of excerpts from GAMS could be dispensed with and replaced with a reference and similarly with the collection of integration formulas over planar regions. In place of these sections, I would have liked to see a treatment of Sinc rules for