Here, P_λ^m and Q_λ^m are the associated Legendre functions in the usual notation and primes indicate derivative with respect to the argument $\cos\alpha$ or $\cos\beta$. In each table the ranges of the parameters are $\alpha = 20°(10°)170°$, $\beta = 10°(10°)\alpha - 10°$, $m = 0(1)9$.

Using software developed at the National Bureau of Standards [4], [5], [6] and run on a CDC 180/855 computer, values in the tables were checked by calculating the value of the appropriate cross product for the given λ, and also for $\lambda \pm .00001$. In every case tested, the absolute value of the cross product at λ was the smallest of the three, and there was a change of sign from $\lambda - .00001$ to $\lambda + .00001$, confirming that the given zero was correct. FB-9 was most fully tested. For $\alpha \leq 80°$, at least four values of λ were tested for each pair of α and β. For $\alpha \geq 90°$, at least two values of λ were tested for each α and β pair. In FB-14 and FB-15, at least one λ for each pair of α and β was tested. Overall, 626 of 40800 entries, approximately 1.5%, were tested and all were correct. The introductory pages of each table have a number of typographical errors and inconsistencies. For example, $P_\lambda^{m\prime}(\cos\alpha)$ also appears as $P_\lambda^{\prime m}(\cos\alpha)$ and reference [3] of this review (Bauer's reference [24]) is listed as being on pages 601–602 and 529–541 of this journal instead of on pages 601–602 and S29–S41. However, these misprints do not affect the accuracy of the tables.

JOHN M. SMITH

Computer Services Division (715)
National Bureau of Standards
Gaithersburg, Maryland 20899

1. H. F. BAUER, "Flüssigkeitsschwingungen in Kegelbehälterformen," *Acta Mech.*, v. 43, 1982, pp. 185–200.

2. H. F. BAUER, "On the numerical value of the roots of the associated Legendre function with respect to the order*," *Z. Angew. Math. Mech.*, v. 61, 1981, pp. 525–527.

3. HELMUT F. BAUER, "Tables of the roots of the associated Legendre function with respect to the degree," *Math. Comp.*, v. 46, 1986, pp. 601–602, S29–S41.

4. J. M. SMITH, F. W. J. OLVER & D. W. LOZIER, "Extended-range arithmetic and normalized Legendre polynomials," *ACM Trans. Math. Software*, v. 7, 1981, pp. 93–105.

5. D. W. LOZIER & J. M. SMITH, "Algorithm 567. Extended-range arithmetic and normalized Legendre polynomials," *ACM Trans. Math. Software*, v. 7, 1981, pp. 141–146.

6. F. W. J. OLVER & J. M. SMITH, "Associated Legendre functions on the cut," *J. Comput. Phys.*, v. 51, 1983, pp. 502–518.

* "Order" here should be "degree".

20[01A35, 11D09].—LEONARDO PISANO FIBONACCI, *The Book of Squares*, An Annotated Translation into Modern English by L. E. Sigler, Academic Press, Orlando, Fla., 1987, xx+124 pp., $23\frac{1}{2}$ cm. Price $19.95.

Leonardo Pisano, generally referred to as Fibonacci for the past century and a half, has been acclaimed the greatest European mathematician of the Middle Ages. His renown is largely due to his authorship of several mathematical classics, of which the most advanced is *Liber quadratorum* (*The Book of Squares*). Therein he ingeniously used geometrical algebra, as exemplified in Book II of Euclid's *Elements*, to explore the relation of integer squares to sums of sequences of odd integers.

He thereby solved a number of indeterminate number-theoretic problems which included several solved earlier in a different manner by Diophantus.

The origin of this book is ascribed in the Prologue to a problem posed to Leonardo by John of Palermo, involving a special case of what are now called congruent numbers. These numbers have been discussed in detail by several modern writers, notably Dickson [1] and Ore [2], and are still being investigated.

Professor Sigler has supplemented this careful translation of *Liber quadratorum* into modern English with detailed comments in contemporary mathematical notation and terminology as well as with a brief biography of Leonardo Pisano, which includes an outline of his works. The sources drawn upon for this version are contained in an appended list of 20 references.

Although the original book was written without numbering of theorems, this translation presents the text conveniently in the form of 24 numbered propositions with proofs and the aforementioned subjoined comments.

Regrettably, a number of typographical errors appear in the comments. For convenient reference these are listed with corrections in the Errata section of this issue.

This book clearly reveals Leonardo Pisano as a highly original, ingenious mathematician, unquestionably the greatest number theorist in the period from Diophantus to Fermat. It should be of special interest to all those interested in the history of the theory of numbers.

J. W. W.

1. L. E. DICKSON, *History of the Theory of Numbers*, Vol. II, Carnegie Institute, Washington, D. C., 1920, reprinted by Chelsea, New York, 1952.

2. O. ORE, *Number Theory and Its History*, McGraw-Hill, New York, 1948.

21[65–06].—A. H. P. VAN DER BURGH & R. M. M. MATTHEIJ (Editors), *Proceedings of the First International Conference on Industrial and Applied Mathematics (ICIAM 87): Contributions from the Netherlands*, CWI Tract, Vol. 36, Centre for Mathematics and Computer Science, Amsterdam, 1987, 433 pp., 24 cm. Price Dfl.56.80.

Four applied mathematics organizations, GAMM, IMA, SIAM and SMAI, from Germany, England, the United States and France, joined in organizing the First International Conference on Industrial and Applied Mathematics, which took place in Paris on June 29–July 3, 1987. While no official proceedings of this major event are going to be published, a national committee in the Netherlands decided to invite the Dutch contributors to prepare their manuscripts for publication in this volume. The volume contains 29 contributions, which are presented in seven categories entitled Applied Mathematical Analysis, Scientific Computing, Control Theory and Signal Processing, Computational Geometry, Applied Probability and Statistics, Mathematics of Natural Sciences, Software and Hardware Aspects.

W. G.