imization of this function in the space of connection strength is shown to be equivalent to determining the optimal set of connection strengths for the desired equilibrium distribution. In the special case where the Boltzmann machine has no hidden units, it is proven that $D(q|q')$ is a strictly convex function with a single local minimum. This implies that a steepest descent approach to the minimization of the divergence function is guaranteed to converge. If a Boltzmann machine does have hidden units, $D(q|q')$ is no longer guaranteed to be convex, and heuristic approaches to its minimization are presented.

All in all, the presentation of the material in this book is very balanced. Rigorous results are presented, and an indication of what the authors believe to be the important open problems in the field are included. The Boltzmann machine serves as a fairly rigorous intellectual springboard into the much less rigorous field of neural networks and neural computing. For myself, I found this book an intellectually comforting introduction to this seemingly chaotic new discipline, which clearly marks out the firm ground and the quicksand.

MICHAEL MASCAGNI

Mathematical Research Branch
National Institute of Diabetes, Digestive, and Kidney Diseases
National Institute of Health
Bethesda, Maryland 20892

13[65-01, 65Fxx, 65Kxx].—PHILIPPE G. CIARLET, *Introduction to Numerical Linear Algebra and Optimisation*, Cambridge University Press, Cambridge, 1989, xiv+436 pp., $22\frac{1}{2}$ cm. Price $29.95.

This is what appears to be a straight translation of the French original, entitled "Introduction à l'analyse numérique matricielle et à l'optimisation", except that the exercises, which originally were published separately, are now incorporated in the same volume at the end of each subsection. For a review of the original text, see [1].

W. G.

1. V. Thomée, Review 5, Math. Comp. **42** (1984), 713–714.

14[65-00, 65-01, 65-04, 41-00, 41-01, 33-00].—B. A. POPOV & G. S. TESLER, *Computation of Functions on Electronic Computers–Handbook* (in Russian), Naukova Dumka, Kiev, 1984, 599 pp., 21 cm. Price 1 Ruble, 90 Kopecks.

For the user of modern computers or calculators of all sizes, the computation of values of elementary functions—and even of some special functions—has become a simple and common task. This fact, however, should not make us forget that a good deal of mathematics has had to be developed over the last few decades in order to establish the methods which ensure that these computations can be performed in a fast and accurate manner. Several handbooks have