REFERENCES

1. P. Beckmann, *The first* 140 *million*, Access to Energy **14** (1987), 1.
2. J. M. Borwein and P. B. Borwein, *Ramanujan and pi*, Scientific American **258** (1988), 112–117.

GEORGE E. ANDREWS
PENNSYLVANIA STATE UNIVERSITY

BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 22, Number 1, January 1990

0273-0979/90 $1.00 + $.25 per page

Cordes' two-parameter spectral representation theory, by D. F. McGhee and R. H. Picard. Pitman Research Notes in Mathematics Series, Volume 177, Longman Scientific and Technical, Harlow, United Kingdom and New York, 1988, 114 pp., $41.95. ISBN 0-470-21084-2

Mathematical developments can be viewed as a river fed from numerous tributaries and giving rise to branching streams of vigorous activity, quiet meandering backwaters which may become brackish and stagnate or possibly return with renewed vigour to the main stream. Multiparameter spectral theory, of which McGhee and Picard's book deals with a particular but central aspect, is an example of such an analogy.

In order to discuss the central questions of multiparameter theory and its relation to other branches of classical and functional analysis it is necessary to formulate the general problem.

Suppose one has k separable Hilbert spaces H_r, $1 \le r \le k$ and a collection of linear operators T_r, V_{rs}, $1 \le s \le k$, defined on these spaces. One now forms the k linear combinations

$$W_r(\lambda) \equiv T_r + \sum_{s=1}^{k} \lambda_s V_{rs}, \qquad 1 \le r \le k \tag{1}$$

where $\lambda_s \in \mathbf{C}$ are scalars. The central question is then to determine the scalars $\boldsymbol{\lambda} = (\lambda_1, \dots, \lambda_k) \in \mathbf{C}^k$ such that all the linear operators $W_r(\boldsymbol{\lambda})$ have nonzero kernels. Briefly then, we have a multiparameter spectral problem invoking a plethora of questions thus generalising in a nontrivial manner one-parameter spectral theory. In particular it is essential to develop a framework in