linear algebra texts; it would have been well worth taking space to develop this theme at some length.

To summarize, after its renaissance in the 1950s, GI theory passed through its infancy in the 1960s and its adolescence in the 1970s. For the 1980s, it is reasonable to expect a coming-of-age in which abstract algebra, operator theory, and mathematical logic may begin to play a larger role on the theoretical side, while presumably also several significant and interesting new applications remain to be found as GIs become better understood and more widely known. To this end, [CM] deserves a place, together with [1], [2], and [3], on the shelf of every GI specialist and potential GI user (since each source offers much material not treated in the other three), and is also to be recommended to the interested general reader or student. While only a few readers will wish to follow every topic to its last details, this book has enough solid content to make it a valuable reference, and even the beginner should have little difficulty in selecting those sections most deserving of intensive study.

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Computers and intractability: A guide to the theory of NP-completeness, by Michael R. Garey and David S. Johnson, W. H. Freeman and Company, San Francisco, 1979, xii + 338 pp., $10.00 (paper).

There is a class of algorithmic problems that is currently receiving a great deal of attention from computer scientists and applied mathematicians: the class of "*NP*-complete" problems. Examples of problems in this class are the satisfiability problem for conjunctive normal form statements in the propositional calculus, the three-colorability problem in graph theory, the travelling salesman problem, the three-dimensional matching problem (i.e., the generalization of the classical marriage problem in the setting of three sexes and three-way marriages), the bin packing problem, and the integer programming problem.[1] For each such problem an algorithm is known for solving all instances of the problem; the basis for the monograph reviewed here is the more refined question of whether the problem is tractable, i.e., whether an algorithm exists that solves all instances of the problem and that has running time bounded by a polynomial in the size of the input. (This interpretation of the notion of tractability is due to Cobham [1] and to Edmunds [2].) It is not

[1]At this time it is not known whether the linear programming problem is *NP*-complete, irrespective of the statements in *The New York Times*, November 7, 1979, p. 1.