REVIEWS

The Association for Symbolic Logic publishes analytical reviews of selected books and articles in the field of symbolic logic. The reviews were published in *The Journal of Symbolic Logic* from the founding of the JOURNAL in 1936 until the end of 1999. The Association moved the reviews to this BULLETIN, beginning in 2000.

The Reviews Section is edited by Alasdair Urquhart (Managing Editor), Lev Beklemishev, David M. Evans, Erich Grädel, Geoffrey P. Hellman, Denis Hirschfeldt, Thomas J. Jech, Julia Knight, Michael C. Laskowski, Volker Peckhaus, Wolfram Pohlers, and Sławomir Solecki. Authors and publishers are requested to send, for review, copies of books to *ASL, Box 742, Vasser College, 124 Raymond Avenue, Poughkeepsie, NY 12604, USA.*

In a review, a reference "JSL XLIII 148," for example, refers either to the publication reviewed on page 148 of volume 43 of the JOURNAL, or to the review itself (which contains full bibliographical information for the reviewed publication). Analogously, a reference "BSL VII 376" refers to the review beginning on page 376 in volume 7 of this BULLETIN, or to the publication there reviewed. "JSL LV 347" refers to one of the reviews or one of the publications reviewed or listed on page 347 of volume 55 of the JOURNAL, with reliance on the context to show which one is meant. The reference "JSL LIII 318(3)" is to the third item on page 318 of volume 53 of the JOURNAL, that is, to van Heijenoort's *Frege and vagueness*, and "JSL LX 684(8)" refers to the eighth item on page 684 of volume 60 of the JOURNAL, that is, to Tarski's *Truth and proof*.

References such as 49*5* or 280*1* are to entries so numbered in *A bibliography of symbolic logic* (the JOURNAL, vol. 1, pp. 121–218).

H. ANDRÉKA, S. GIVANT, and I. NÉMETI. ***Decision problems for equational theories of relation algebras.*** Memoirs of the American Mathematical Society, vol. 126, no. 604. American Mathematical Society, Providence, March 1997, xiv + 126 pp.

This monograph contains an Introduction and four chapters. The Introduction does an excellent job of explaining all the main results. Chapter I, entitled Preliminaries, summarizes what is needed from the theory of relation algebras, universal algebra, recursion theory, and model theory. There are three major results, one in each of the remaining three chapters.

In Chapter II the authors extend Tarski's theorem that the variety RRA of representable relation algebras has an undecidable equational theory. An equivalent form of Tarski's theorem was announced in 1941. Tarski's original proof used Church's theorem on the undecidability of validity in first-order logic. It was shown much later by J. D. Monk (*On representable relation algebras*, ***The Michigan Mathematical Journal***, vol. 11 (1964), pp. 207–210) that RRA is *not* finitely axiomatizable, but by early 1942 Tarski had also proved that the variety RA of relation algebras, which *is* finitely axiomatized, also has an undecidable equational theory. Tarski was able to show that very many undecidable first-order theories (including most set theories) can be formalized as equational theories of relation algebras. From this the undecidability of the equational theory of relation algebras follows immediately. This result was not mentioned in print until 1948, and Tarski's proof was not published until 1987 (see A. Tarski and S. Givant, ***A formalization of set theory without variables***, American Mathematical Society, 1987), although a different proof appeared earlier