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SELECTED MATHEMATICAL REVIEWS

SUSAN FRIEDLANDER, FROM THE EDITORS

In this section we are inspired by the frontispiece of the 1670 Latin translation of Diophantus's *Arithmetica* with marginal notes by Pierre de Fermat. We have chosen to reprint from the AMS *Mathematical Reviews* certain "jewels" in the "Diophantine crown". Of course, in choosing the reviews of a small number of articles related to Diophantine arithmetic, we are covering only a tiny subset of excellent papers. We hope to show how in the past 40 years this classical area of mathematics has stimulated very important developments.

We begin with reviews of the 1966 and 1967 papers of Alan Baker. These papers prove linear independence (over the field of algebraic numbers) of certain collections of logarithms of algebraic numbers and provide explicit lower bounds for linear combinations of these transcendental numbers, thereby resolving a basic unsolved problem and establishing a fundamental, and effective, Diophantine technique. We continue with Gerd Faltings's famous paper on finiteness theorems for abelian varieties over number fields. We then turn to a review of a 1984 paper by Jan-Hendrik Evertse. This paper establishes uniform bounds for the number of pairs of units in a fixed number field that sum to 1. This method gives, as a consequence, uniform bounds for the number of solutions to a large and interesting class of Diophantine equations. Naturally we include the reviews of the papers of Andrew Wiles and of Richard Taylor and Andrew Wiles concerning Fermat's Last Theorem and the Taniyama-Shimura conjecture. We conclude with a review of the recent proof by Preda Mihăilescu of Catalan's conjecture that two consecutive natural numbers other than 8 and 9 cannot be proper powers.

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