

Then follows the interesting story of how Dirichlet, a young student in Paris in 1825, tried his hand on Fermat's equation with exponent 5. He used an identity known since Euler's days and the infinite descent to show that the equation has no solution where one of the numbers is a multiple of 10. "This is where Legendre, then well over 70 years old, stepped in. After presenting Dirichlet's paper to the Academy in July 1825, it took him only a few weeks to deal with the remaining case." "As to Dirichlet, he was soon to take his flight and soar to heights undreamt of by Legendre.."

One of Legendre's influential contributions was the treatise on numbers which he prepared for more than thirty years. "He sought to give a comprehensive account of number theory, as he saw it at the time, including, besides his own research, all the main discoveries of Euler and Lagrange, as well as numerical evidence (in the form of extensive tables) for many results whose proofs he felt to be shaky."

The *Théorie des Nombres*, published in 1830, is the final form given to two previous editions, appropriately called *Essais*. Yet, "by then, as his younger contemporaries well knew, Gauss's *Disquisitiones* had made it almost wholly obsolete."

An indispensable part of Weil's book is the long series of appendices attached to the three main chapters. Their purpose is to show, from a modern point of view, how to consider certain classical questions, to indicate developments of importance originated in the ideas of that period, but sometimes also to give proofs of results described in the main text. Thus, we may read an illuminating appendix under the title "The Descent and Mordell's Theorem", another about "The Addition Theorem for Elliptic Curves", or also "Hasse's Principle for Ternary Quadratic Forms", etc.

Here I reach the point when it is appropriate to refer to the physical characteristics of the book. Should I say that it is a medium-sized volume, well bound and pleasantly printed, with large size type, greatly facilitating the reading? Should I add that it is well organized, has good indices, and no misprints? I just want to say that the hand holds it well, and does not wish to let it go.

Professor Weil, hear as a distant echo from younger days: Rico é o seu livro que nos revela uma gloriosa exploração intelectual pelos verdadeiros heróis.

PAULO RIBENBOIM

BULLETIN (New Series) OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 13, Number 2, October 1985
© 1985 American Mathematical Society
0273-0979/85 \$1.00 + \$.25 per page

Fundamentals of generalized recursion theory, by M. C. Fitting, Studies in Logic and The Foundations of Mathematics, Volume 105, North-Holland Publishing Company, Amsterdam, 1981, xx + 302 pp., \$63.75 U.S./Dfl. 150.00.

0. The time seems ripe for a broad look at generalized recursion theory (g.r.t.) against the background of ordinary recursion theory (o.r.t.), with