nor is the result in it mentioned; (3) In a paper in the 1954 Transactions of the American Mathematical Society Levitzki solved Kurosch's problem for a wider class of algebras than those mentioned in the text. Although this paper appears in the references to Chapter 10 the theorem in question is not cited.

But this, of course, is not a very serious drawback and the author is to be congratulated on having written this useful and encyclopaedic volume which, this reviewer feels, will be one of the standard works on the subject for some time to come.

ALEX ROSENBERG

Zetafunktionen und L-Funktionen zu einem arithmetischen Funktionenkörper vom Fermatschen Typus. By H. Hasse. Berlin, Akademie-Verlag, 1955. Abhandlungen der deutschen Akademie der Wissenschaften zu Berlin, Klasse für Mathematik und allgemeine Naturwissenschaften, Jahrgang 1954, Heft 4. 70 pp. DM 8.00.

In this memoir, the author has translated into his own language the reviewer's paper *On Jacobi sums as Grössencharaktere* (Trans. Amer. Math. Soc. vol. 73 (1952) pp. 487–495). Some minor points are given a fuller treatment, e.g. the question of determining the exact conductor of the characters which appear in the solution of the main problem (no general answer being given for that question). By restricting himself to the curve $X^m+Y^n=1$ (instead of the more general $aX^m+bY^n=1$), Hasse has been able to give a definition of the zeta-function, based solely on the reduction modulo prime ideals, which does not make the distinction between "ordinary" and "exceptional" primes. This case, however, is undoubtedly far too special to bring out the characteristic features of this important problem, on which one may consult more profitably the recent work of Deuring (Gött. Nachr., 1956) on elliptic curves with complex multiplication. One may also observe that, so far as the "ordinary" primes are concerned, such elliptic curves, as well as the abelian varieties arising from the decomposition of the Jacobian variety of a curve of the Fermat type, are all special cases of the abelian varieties with complex multiplication, whose zeta-function has now been determined by Taniyama (Tokyo Symposium on Number-Theory, 1955); in this sense the reviewer's treatment of the Fermat curve, as reproduced in substance in the present monograph, may be said to have no more than a retrospective interest.

A. WEIL