The material of Chapter IV, on the structure of complete local rings, is due to the reviewer. Let A be a complete local ring, M its maximal ideal, ϕ the canonical homomorphism of A onto A/M. If A and A/M have equal characteristics p, then A contains a field K such that $\phi(K)=A/M$. If $p=0$, then this can be readily derived from "Hensel's Lemma," the statement of which for complete local rings is just what one expects; in the more difficult case $p>0$, the proof follows from the lifting theorem stated below. (A particularly simple proof in this equal-characteristic case has been recently given by A. Geddes [J. London Math. Soc. vol. 29 (1954) pp. 334–341].) Suppose now that A/M has characteristic $p>0$ (which is certainly the case if this characteristic is different from that of A, on which we make no assumption), let B be a complete discrete valuation ring of characteristic zero whose maximal ideal is generated by p, and assume τ a homomorphism of B onto A/M (existence of B and τ is well known). The lifting theorem then asserts the existence of a homomorphism σ of B into A such that $\phi\sigma=\tau$. From this can be deduced that every complete local ring is the homomorphic image of a power series ring over K or B, and also is (in the absence of zero divisors) a finite module over such a power series ring. Some further theorems on structure are proved and some applications made to the ideal theory in complete local rings.

In Chapter V, it is proved that if a ring with nucleus lacks zero divisors and is integrally closed then its completion also possesses these properties. This is a generalization of Zariski's theorem on the analytical irreducibility and analytical normality of normal varieties. A form of the Weierstrass preparation theorem is given and with its aid unique prime factorization is proved in the power series rings described in the preceding paragraph.

In Chapter VI there is defined a Kronecker product for two M-adic rings. Some other questions are briefly considered.

I. S. Cohen

Editorial note: The preceding review was found among Professor Cohen's papers after his death. Attached notes indicate that a final paragraph was to have mentioned the historical notes at the end of the chapters; the extensive bibliography (98 items); and the existence of a number of misprints, some merely typographical, others actual mistakes (pp. 22, 35, 37, 51). The mistake which Cohen considered most serious appears to be on p. 35, fourth line from the bottom.

Funzioni ipergeometriche confluenti. By F. G. Tricomi. Rome, Cremonese, 1954. 16+312 pp. 3500 Lire.

This book on confluent hypergeometric functions differs quite con-