BOOK REVIEWS

Fourier transforms. By R. R. Goldberg. Cambridge University Press, 1961. viii + 76 pp. $3.75.

This short book contains an elementary exposition of the basic theorems of Fourier analysis on the real line. A rudimentary knowledge of Lebesgue integration is all that the reader is required to have.

The following topics are treated: Inversion and uniqueness (via $(C, 1)$-summability) of the L^1-Fourier transform, the action of analytic functions on Fourier transforms, Wiener's theorem on the span of the translates of a function f in L^1 (including some extensions in which the transform of f is allowed to have zeros), the Plancherel theorem, and finally Bochner's theorem on the representation of positive-definite functions as Fourier-Stieltjes transforms.

The author deliberately avoids any appeal to functional analysis in his proofs, which are quite explicit and constructive. He does, however, point out how the theory can be carried over to arbitrary locally compact abelian groups and he describes the algebraic setting of Wiener's theorem in terms of ideal theory. The maximal ideals of L^1 are identified. There are also references to some very recent papers.

The book may thus be described as a concrete introduction to abstract harmonic analysis.

WALTER RUDIN

An introduction to homological algebra. By D. G. Northcott, Cambridge University Press, 1960. xi + 282 pp. $8.00.

This book is a leisurely and detailed introduction to homological algebra. Very little background is assumed and the account is essentially self-contained.

The author begins by explaining the basic ideas concerning modules over a ring, functors and categories, as well as treating the tensor product and Hom in some detail. Next the homology functor is introduced, the connecting homomorphism is defined and its standard basic properties are given. After introducing projective and injective modules, resolutions of modules are discussed and then the theory of derived functors is developed. Next, the general theory of Ext and Tor is treated, the various homological dimensions are defined and their basic properties stated. This whole development is carried out only for the category of modules over rings.

The material sketched occupies about 140 pages. It seems to this reviewer that the author has fallen into the trap of believing that