of the seventeen chapters; they are as follows. (1) Point sets. Euclidean space. (2) Measure. Measurable functions. (3) Integration. (4) Additive set functions. (5) The Lebesgue spaces L_p and the Orlicz spaces L_ϕ. (6) Banach space and Hilbert space. (7) Bounded linear transformations. (8) Banach spaces of finite dimension. (9) Bounded linear transformations in Hilbert space. (10) Range, null space and spectral properties of bounded linear transformations. (11) Compact linear transformations. (12) Compact symmetrisable, self-adjoint and normal transformations in Hilbert space. (13) General theory of non-singular linear integral equations. (14) Integral equation with normal kernel. (15) Integral equation with a symmetrisable kernel, expressible as the product of a kernel of finite double-norm and a bounded non-negative function. (16) Integral equation with Marty kernel. (17) Integral equation with Garbe kernel or Pell kernel.

Despite its self-imposed limitations, the book contains so much material, and treats its topics so thoroughly, that it is a welcome addition to the literature of functional analysis; it is recommended as both a reference for the expert and a text for the student.

PAUL R. HALMOS

Principles of numerical analysis. By A. S. Householder. New York, McGraw-Hill, 1953. 10+274 pp. $6.00.

With the age of supersonic aircraft, hydrogen bombs, large automatic control systems, and so on, has come a large increase in the volume and importance of scientific computation. The procession of automatically sequenced digital computers following J. W. Mauchly's construction of the ENIAC during the war is providing an enormous capacity to solve these computing problems and others. But many users and programmers of these machines know relatively little mathematics, while mathematicians are often quite unaware of the mathematical literature on computing methods. Much of the newer literature is found only in journals of diverse fields, or in reports of various research projects.

To cope with the situation, here and there serious mathematicians have been formed into groups with numerically inclined physicists and others, in order to study computing methods and devise new ones. The mathematicians on such a team are likely to call themselves *numerical analysts*. But there has been no agreed definition of numerical analysis as these people use the words, and no standard reference work. Books by Milne, Scarborough, Hartree, and others are primarily oriented toward desk calculating machinery, and most are written for mathematical amateurs or undergraduate students.