mappings of the upper half-plane into itself) and a study of quasi-self-adjoint extensions. (If A is symmetric with defect index (m, m), $m < \infty$, a quasi-self-adjoint extension is an operator B such that $A \subset B \subset A^*$ and such that the co-dimension of the domain of A in the domain of B is equal to m.) The second appendix studies self-adjoint extensions of differential operators; it concludes with some concrete examples (such as the differential equations satisfied by the Bessel functions).

A student would find the detailed reading of the book highly profitable. If the authors need an analytic fact, they prove it. They prove, in particular, the completeness of L_2, they prove Plancherel's theorem, and they prove Bochner's theorem on the representation of positive definite functions. (The latter is used to prove the spectral theorem for self-adjoint operators; similarly, the spectral theorem for unitary operators is made to follow from the solution of the trigonometric moment problem.) The book contains many refreshing comments. Examples: the distance from a vector y to the span of the linearly independent vectors $x_1, \cdots, x_n$ is the quotient of the Gramian of $x_1, \cdots, x_n, y$ by the Gramian of $x_1, \cdots, x_n$; a Jacobi matrix represents a completely continuous operator if and only if its coefficients tend to zero; if a one-to-one mapping of a Hilbert space onto itself preserves inner products, then it is linear (and therefore unitary). The book also contains many illuminating examples worked out in complete detail; they include multiplication and differentiation on function spaces and shifts on sequence spaces. The authors' treatment of cyclic (self-adjoint or unitary) operators provides a very good introduction to multiplicity theory (which they do not treat). The style throughout is unhurried, precise, and clear.

PAUL R. HALMOS

Quadratische Formen und orthogonale Gruppen. By Martin Eichler. (Grundlehren der mathematischen Wissenschaften in Einzeldarstellungen, vol. 63.) Berlin, Göttingen, Heidelberg, Springer, 1952. 12+220 pp. 24.60 DM; bound, 27.60 DM.

This is a competent and highly original monograph on the algebraic and arithmetic theory of quadratic forms from the modern point of view of Witt's Crelle 176 paper (1937). Much of the work is done in an arbitrary classical product formula (c.p.f.) field—namely a finite algebraic extension of the rational field or a field of rational functions of one variable over a Galois field—subject only to the perpetual assumption that the characteristic is not 2. It contains the classical theory of equivalence of forms under linear transformations with co-