only for a part of $(-\infty, +\infty)$, theorems where $s(x)$ is assumed bounded from one side at the expense of the positiveness of one of the kernels involved, theorems with abstract metrics instead of $M'(f) = \sup_x |f(x)|$, $M(f) = \lim \sup_{x\to\infty} |f(x)|$. Important for applications are kernels of forms other than $k(x-y)$ but approximable by such kernels. In the main theorem of this type the approximation is in the sense $\sup_{\sigma_1 \leq \sigma \leq \sigma_2} \int |k(x, x-y) - k(y)| e^{-\sigma y} dy \to 0$ for $x \to \infty$, while $s(x)$ is allowed to satisfy $s(x) = O(e^{\sigma x})$. Chapter IV ends with the applications to special methods, especially Hausdorff's. A remark on p. 92 is not quite correct: the exact form of the high-indices theorem for the Euler method is known (Meyer-König and Zeller, Math. Z. vol. 66 (1956)). Mercerian theorems in the next chapter are based on the following result about Fourier transforms. Let $k_1 \in V$ if $k_1(t) = \int_{-\infty}^{+\infty} e^{-itx} dk(x)$, with $k(x)$ of bounded variation. Then $k_1(t)^{-1} \in V$ if $\int |dq| \leq \inf_t |D(t)|$, where q is the singular component of k, and D is the Fourier transform of its discontinuous component. Resulting Mercerian theorems are applied to special methods, in particular again to Hausdorff methods with the condition $a_n = O(n^{-1/2})$.

Chapter VI stands by itself. All known proofs of the prime number theorem contain Tauberian ideas, and the author makes it his aim to present these comprehensively. After an exposition of the Landau-Ikehara theorem, "non-elementary" proofs are given, based on it or on a Tauberian theorem for the Lambert method. Wright's modification of Selberg's formula and general Tauberian theorems for the transformation $s(x) + x^{-1} \int_1^\infty s(x-y) dk(y)$ lead to "elementary" proofs.

The author writes with great elegance, lucidity and an unerring taste; many original proofs are given. For a long time to come, this excellent book will remain a standard work of the subject.

G. G. Lorentz

Die Klassenkörper der komplexen Multiplikation. By M. Deuring. Enzyklopädie der Mathematischen Wissenschaften, Band I_2, Heft 10, Teil II. Stuttgart, Teubner, 1958. 60 pp. DM 15.

The work on complex multiplication associated with the elliptic and modular functions belongs to one of the most beautiful, fascinating and important parts of pure mathematics. It reveals the closest and most surprising connection between complex function theory, algebra and the higher arithmetic, in particular classfield theory; and has also led to the recent developments in the subject.

The topics treated in the booklet have become classical and the author makes use of the various accounts to be found in the treatises on algebra by Weber, Fricke and in the book of Fueter on complex multiplication as well as papers by Hasse and himself. The tract contains a fairly rapid and condensed account of the subject and so it requires considerable knowledge by the reader if he is to comprehend fully the subject matter. Nevertheless he will find it very convenient to have this excellent and authoritative production at his disposal.

The book consists of four parts. The first contains the pertinent results on the modular and elliptic functions; and the second the relevant theory of complex quadratic fields and ideal and divisor theory. There are various methods of defining classes of ideals, and the vital problem is to find the classfields, i.e. the Abelian algebraic extensions of the complex quadratic field and their relation to the ideal class groups. This is done in the third and fourth parts in which it is shown that certain modular functions define the classfields for appropriate ideal classes. Two different proofs are given, the first depending on the general theory of Abelian fields while the second is independent of the general classfield theory.

L. J. MORDELL

Topologie algêbrique et theorie des faisceaux. By Roger Godemont. Actualités Scientifiques et Industrielles, no. 1252, Paris, Hermann, 1958. 8+283 pp.

"We have therefore tried to write a book which presupposes no familiarity with algebraic topology . . . ." This statement is taken from the preface of the book under review, and surprisingly enough, the author may have succeeded in his attempt. Of course, until the appearance of the second volume of this work, the reader may find himself still unfamiliar with algebraic topology (at least as the algebraic topologists know it), but the author seems to be very much aware of this deficiency and will probably remedy it soon. The essential fact, however, is that this book starts from scratch (i.e., from approximately the second year graduate school level) and presents extremely lucidly a comprehensive theory of sheaves.

The book is divided into two chapters. The first is devoted to homological algebra, the second to the theory of sheaves. In the first chapter, the standard material on abelian categories, functors, exact sequences, chain complexes, and homology is covered. In addition to this, the author includes simplicial chain complexes and semi-simplicial chain complexes (the semi-simplicial complexes of Eilenberg-Zilber), local coefficients, a concise but clear exposition of spectral sequences, and a study of the functors Ext and Tor. Cartesian and