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BOOK REVIEWS

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HAYES, C. A. AND PAUC, C. Y. **Derivation and Martingales.** Springer-Verlag, Berlin, 1970. viii + 203 pp. $13.20

REVIEW BY K. KRICKEBERG
University of Heidelberg

This is a clear survey over a complex field full of technical details. The first part is devoted to a situation which, although general and abstract in its setting, still represents classical differentiation theory: the derivation of set functions by means of "bases," that is, families of generalized sequences (nets) of sets associated to the various points of the basic space like sequences of spheres converging to a point. Properties possessed by classical bases (Vitali covering properties) are assumed and derivation statements derived. Other chapters investigate implications of the converse type, and various methods of proving Vitali properties of particular bases. In part two, a fundamental change of the point of view takes place: instead of nets of sets associated to individual points, partitions of the entire space and the sigma-algebras they generate are the basic elements. This allows to consider, in addition to pointwise convergence, theorems of the global type: stochastic convergence or convergence in an Orlicz space. Finally, replacing the (atomic) sigma-algebras generated by finite or countable partitions by arbitrary sigma-algebras, martingales come in. In fact it turns out that most of the theory can be developed from the outset in this generality. On the other hand, there are many interesting particular cases and applications. The bibliography is virtually complete, and a complement collects various results connected with the field proper.

KARLIN, SAMUEL. **Total Positivity.** Stanford University Press, 1968. xi + 576 pp. $17.50.

Review by ALBERT W. MARSHALL
University of Washington

Many of us interested in total positivity have anxiously awaited the appearance of this book, which together with a promised second volume constitutes an exhaustive and definitive treatise on both the theory and its applications. The book is of major importance: it is a basic work on a subject not previously treated adequately in the literature. Moreover, there are included a considerable number of new results which have not previously appeared in print.