equivalence problems for complete valuated fields, and a description of the structure of fields which are complete for a valuation of rank one and have a given residue class field.

In addition, there are two auxiliary appendices, one on the Galois theory for infinite extensions, and one on the general theory of linear algebras. Each chapter has a separate bibliography which greatly facilitates the approach to the extensive literature on the various aspects of valuation theory.

Throughout the book, a great effort is made to present the theory with as much generality as is feasible today. Frequently this is accomplished at the expense of much of the intuitive content of the main results. The presentation is extremely concise, unfortunately to the degree of sometimes omitting the easier parts of a proof, and occasionally of suppressing badly needed explanations of terminology and notation. Although these features will cause some difficulty to the general reader, they will not detract from the great value of this book to the specialist for whom it is apparently designed. It fully accomplishes its main purpose, namely to give a systematic account of the present status of valuation theory without dwelling on its applications to other fields. Indeed, a very considerable amount of recent research, a good deal of which is due to the author himself, is here collected in the short space of 250 pages.

G. HOCHSCHILD

Pfaff's problem and its generalizations. By J. A. Schouten and W. van der Kulk. Oxford, Clarendon Press, 1949. 16+542 pp. $12.50.

As originally conceived, Pfaff's problem was to integrate a single equation obtained by equating to zero a linear homogeneous differential expression. Subsequently, the number of equations was increased to a finite arbitrary r and the left members made skew-symmetric forms of arbitrary degrees. Once the dimension of the integral variety sought has been specified, the equations on the differentials are equivalent to equations on the first derivatives of the variables with respect to the parameters on the variety. The most recent generalization, first made in the junior author's thesis written under the senior author's direction in 1945, replaces the skew-symmetric equations defining the derivatives implicitly by parametric equations defining them explicitly, subject to certain conditions on the rank of matrices in the first and second derivatives.

This book gives in one of the notations associated with the tensor calculus a unified account of the main results in the area just outlined. The classical theories of first order linear partial differential systems,