

submitted to the editors of the *Mathematische Annalen* shortly before the World War. It contained numerous points of contact with the results of Chapter VI (Dependence of the characteristic values of elliptic boundary value problems on the domain and on the coefficients of the problem, zeros of the fundamental functions and the like). A reference to a recent paper by S. A. Janczewsky (*Annals of Mathematics*, vol. 29 (1928), pp. 521–542, particularly p. 542) would not be out of place on page 393 in connection with the corrected statement of a property of the nodes of the fundamental functions. It was Janczewsky who pointed out that the corresponding statement on page 365 of the first edition was not correct.

Some of the mistakes of the first edition are corrected in the present one, while some others are not. It is a little disappointing, for instance, that the erroneous treatment of zeroes of Bessel's functions (pp. 427–428) and an inconsistent definition of the Legendre's functions of the second kind (p. 436), which were pointed out by the reviewer of the first edition, are preserved in the second edition. A certain elegant vagueness of the style, which was also noticed by the reviewer of the first edition, of course, is preserved in the second one. It is desirable, however, that the statements of some results be made more precise. For instance, the statement of Picard's necessary and sufficient conditions for the existence of a solution of a Fredholm integral equation of the first kind is not correct as it stands on pages 135–136. The boundedness of the integrals $\int K(s, t)^2 ds$, $\int K(s, t)^2 dt$ on page 129 is not needed for the possibility of extension of the classical results of Fredholm theory to unbounded kernels. The statement concerning the sequences converging in mean (p. 93), which was erroneous in the first edition (pp. 96–97), is now correct, but fails to emphasize the essential fact that the function $f(x)$ to which the sequence converges in mean is uniquely determined, and that the whole property is merely a modification of Cauchy's criterion for the existence of a limit of a sequence, and states in essence the completeness of Hilbert's space.

The present reviewer shares with his predecessor the eager expectation (not yet realized) of the promised Volume II of the treatise. A quantity of most important facts concerning the existence of solutions and the precise formulation of the conditions under which these solutions exist are referred to the second volume. Without this volume at hand, the reader can not help the feeling of a certain lack of a solid foundation for many theories developed in the first volume. Hence, thankful as we are for the completion of the present second edition of the first volume of this excellent treatise, we have to agree with one of the authors of the book (R. Courant): "Das Erscheinen dieser zweiten Auflage legt mir mit verdoppelter Stärke die Verpflichtung auf, den zweiten Band, mit dem zusammen dieser vorliegende erst ein abgeschlossenes Ganzes bilden wird, in Druck zu geben."

J. D. TAMARKIN

Algebraische Theorie der Körper. By Ernst Steinitz. Edited by Reinhold Baer and Helmut Hasse. Berlin and Leipzig, de Gruyter, 1930. 150+27 pp.

The present book is a separate edition of Steinitz' well known paper on abstract fields, which appeared in the *Journal für Mathematik* (vol. 137 (1910)). Steinitz's paper has given rise to numerous investigations on abstract fields and