

connection with the Poisson integral. The Riesz-Fischer theorem and other important results are given in the exercises.

The book as a whole should certainly serve as an excellent adjunct to a course in Fourier series, both for students of pure mathematics and of mathematical physics. It could also serve well as a guide to a student attempting to make progress in the theory by means of individual study. In this case it would be advisable to use it in connection with other texts where the treatment is less condensed. Finally, it is an excellent reference work for those already familiar with the theory who desire a compact summary of the most outstanding results.

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*Einführung in die Theorie der kontinuierlichen Gruppen.* By Dr. Gerhard Kowalewski. (Mathematik und ihre Anwendungen, Band 9.) Leipzig, Akademische Verlagsgesellschaft, 1931. 10+396 pp.

This attractive volume is a distinctly worth while addition to the literature of the Lie theory of continuous groups. The author, himself an erstwhile student of Lie's, has lectured at various times on this subject at a number of German universities, and from these courses, and from a basis of notes and recollections of conversations with Lie, the present work is professed to have sprung. The presentation is made with care and skill and is distinctly readable. With the introduction of each new concept the author avails himself of illustrative material from geometry or mechanics to help set forth the idea itself preparatory to its formulation in analytical garb. Thus, at the very beginning a consideration of the steady two-dimensional flow of a fluid is made to yield the concepts of the group of infinitesimal transformations, the path curves, the integrated finite transformations, etc. Critical remarks are freely interspersed in the text and add life to the presentation. At appropriate intervals the theory is summarized, and is consolidated now and again by detailed and sometimes lengthy discussions of important and interesting special cases.

Despite the smoothness of its exposition the book requires of the reader a considerable measure of mathematical maturity. A familiarity with the analysis necessary and incidental to the discussion is assumed without question. The work is not to be thought of, therefore, as one designed or suited to give a hasty and superficial acquaintance with the subject. On the contrary it seeks to present the theory in as complete a form as possible, and to this end the author has sought to incorporate with the fundamental work of Lie the important results of such modern investigators as Cartan and F. Schur.

The volume is one of 394 pages and is divided into four chapters. The first of these, entitled *Infinitesimal Transformations and One-Parameter Groups*, begins with the fundamental definitions and extends through a discussion of the integration of Lagrangian and Pfaffian systems of equations. The remaining chapters are given respectively to *Multiple-Parameter Groups and Their Infinitesimal Transformations*, to *Lie's Fundamental Theorems*, and to *Groups of Transformations on the Line and in the Plane*.

The book will be indispensable to workers in its field, and is generally to be recommended.

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