

stage to which it has settled down in the past ten years, the more critical mathematical and conceptual formulation, the justification and extension of the Hund theory, the applications to the physics of the solid and liquid states and to chemistry, and the important heuristic advances in the theory of nuclear structure. In fine, in spite of its size, and although the topics it treats are handled with competence, it is but an incomplete chapter in an "Introduction to Theoretical Physics."

H. P. ROBERTSON

*Moderne Algebra.* By B. L. Van der Waerden. 2d edition. Part 1. Berlin, Springer, 1937. 9+272 pp.

This well known textbook on modern algebra here appears in a second edition. There are no radical departures from the first edition, but the material has been somewhat rearranged and the presentation has been improved and simplified in places. The author states in the foreword that he recognizes that the axiom of choice and the well-ordering theorem are tools which are not desirable for the foundation of algebraic theory and hence he has omitted those parts which depend upon such methods.

Among the additions to the first volume in this second edition one should mention the sections on finite fields, vector spaces, and decompositions of rational functions into partial fractions. Most important is, however, the new chapter on evaluation theory. This is a theory which one can consider both as an arithmetic and as a metric theory of algebraic systems. The author considers Archimedean and non-Archimedean evaluations and the corresponding perfect extensions of fields. The evaluations of the rational field are determined. The fundamental results of Ostrowski, giving all evaluations of the complex field and showing that Archimedean evaluations can occur only in subfields of the complex field, are indicated but not proved. A last section deals with the behavior of evaluations by algebraic extensions of the field.

Let me say, to conclude, that the new edition has preserved the clear presentation and readability of the first.

OYSTEIN ORF

*Origins of Clerk Maxwell's Electric Ideas as Described in Familiar Letters to William Thomson.* Edited by Sir Joseph Larmor. Cambridge University Press, 1937. 56 pp.

The twenty-two letters in this collection were written between 1854, the year in which Maxwell received the degree of Bachelor of Arts from Cambridge, and 1879. In them Maxwell discusses with his friend Thomson the ideas forming in his mind in his efforts to develop a comprehensive theory of the electromagnetic field. It is interesting to observe how he is led, step by step, to reject the action-at-a-distance theories of his continental contemporaries in favor of the concept of stresses in a medium as propounded by Faraday. The letters are not, however, confined to electrical theory alone. Some are concerned with the curvature of surfaces, others with vortices in an incompressible fluid, several trace his maturing ideas on the analysis of colors, and optics and thermodynamics take their share. Sir Joseph Larmor has performed a service to science in making these letters accessible to the public in published form.

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