This is clearly destined to be a standard reference for many years to come, and should be on the shelves of every library and on the desk of every harmonic analyst. It is to be hoped that the second volume will appear without undue delay, to complete a major addition to the literature of the subject. J. H. WILLIAMSON

HAMERMESH, M., *Group Theory and its Application to Physical Problems* (Pergamon Press, 1962), 509 pp., 105s.

This is an excellent textbook of which about 400 pages are devoted to pure mathematics and about 100 pages to applications. The exposition is extremely clear throughout and there are many examples embodied in the text by which the reader can test his understanding of the theory. In the opinion of the reviewer, the book is rather easier to read than the other (excellent) books on the subject, such as those by Boerner and by Wigner, which have recently appeared, and is therefore admirably suited to the beginning research worker in theoretical physics. The chapter headings of the book are as follows: 1. Elements of group theory; 2. Symmetric groups; 3. Group representations; 4. Irreducible representations of the point symmetry groups; 5. Miscellaneous operations with group representations; 6. Physical applications; 7. The symmetric group; 8. Continuous groups; 9. Axial and spherical symmetry; 10. Linear groups in n-dimensional space. Irreducible tensors; 11. Applications to atomic and nuclear problems; 12. Ray representations. Little groups. It seems a pity that the author has not found it possible to discuss the Lorentz group, for a treatment of this topic given with the clarity of the rest of the book would have been most acceptable; however, the author maintains that to do this adequately would involve giving an account of quantum field theory.

The treatment in Chapters 1-7 is very complete but, in the remaining chapters, some results are quoted without proof. One lapse in rigour, which could easily be corrected, is that it is the converse of Lemma II on page 100, and not the lemma itself (as stated on page 101) which is useful as a test of irreducibility. The smooth style in which the book is written and the clear printing and layout make it a pleasure to read. D. MARTIN

GERRETSON, J. C. H., *Lectures on Tensor Calculus and Differential Geometry* (Noordhoff, 1962), xii+204 pp., Dfl. 25.

The first four chapters of this book deal with linear and metric vector spaces, bilinear and quadratic forms, and tensors, these being defined as multilinear forms on a real vector space with an inner product; there is no mention of the dual space. In Chapter 5 a manifold is defined, and throughout the book a manifold is always regarded as being embedded in a Euclidean space. Chapter 6 deals with curves, and the usual topics such as the Frenet-Serret formulæ, involutes and evolutes are discussed. In Chapter 7 geodesic differentiation is defined and a treatment given of the Christoffel symbols, geodesic correspondence, Ricci coefficients of rotation, etc. Chapter 8 is devoted to the theory of hypersurfaces and concludes with a proof of the invariant character of the Gaussian curvature, while Chapter 9 deals with covariant differentiation, the Riemann tensor, the Weyl conformal curvature tensor, Einstein spaces etc. The book concludes with an account in Chapter 10 of Bonnet's problem concerning the existence of hypersurfaces with given first and second fundamental forms (compatible with the equations of Gauss and of Codazzi).

For a textbook devoted to only the local aspects of differential geometry, the choice of material is very good, but the treatment, in the opinion of the reviewer, is rather uninspiring and lacks some modern colour which might have been expected.

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