touches on other mathematical fields tends to obscure the fact that there is a considerable body of pure lattice theory which is motivated in a natural manner from the postulates, and which has produced many results and problems which are fascinating and quite difficult. This is in contrast with many of the applications where the lattice theory is often quite trivial and the difficulties are those associated with the field in which the application is being made. Thus the lattice theory involved in the study of vector lattices is of a very elementary nature, while many of the results are not at all easy.

As a minor criticism, it appears that several of the "unsolved" problems should have been considered more carefully. For example, problem 82 asks for a characterization of Boolean algebras which are isomorphic with the lattice of all regular open sets of a suitable T_1-space. But such a Boolean algebra must be complete and any complete Boolean algebra is isomorphic with the lattice of regular open sets of its associated Boolean space. Also the answer to problem 93 is trivially in the negative. It should be pointed out in general that the problems vary widely both in difficulty and importance.

Clearly, the new edition is a great improvement over the original, and it should be the definitive work in the subject for some time to come, particularly, since the rapid growth of the field makes it unlikely that another such comprehensive account will be written.

R. P. DILWORTH

Calcolo tensoriale e applicazioni. By B. Finzi and M. Pastori. Bologna, Zanichelli, 1949. 8+427 pp. 2000 Lire.

Despite the wealth of the literature which concerns itself with vector and tensor analysis and allied subjects, the present volume is a unique and worthwhile addition to the field. It is a broad survey of tensor algebra and tensor calculus, skillfully interwoven with geometric considerations, followed by applications to the mechanics of deformable continua, electromagnetic fields, and the theory of relativity.

The exposition is lucid throughout, proceeding from particular intuitive ideas to general abstract concepts. The account is replete with illustrative examples. The many applications make it of equal interest to the mathematician and theoretical physicist.

As is natural in such a broad, undetailed treatment, little attention is given to questions of rigor (as, for example, Duschek-Mayer, *Lehrbuch der Differentialgeometrie*, vol. 2, 1930) and the discussion of many topics appears to be compressed excessively. Even the survey of differential geometry, which comprises four chapters and is an excellent introduction to the subject must, of necessity, restrict itself to the high points of the field. In the opinion of this reviewer, the inclusion in later editions of a chapter on the classical mechanics of particles and rigid bodies would be especially desirable.

Vector fields in euclidean 3-space are treated in the first chapter. The concepts of circulation, gradient, curl, flux, divergence are developed. Harmonic fields, the integral theorems, Green's lemmas are discussed and the chapter concludes with various formal properties of differential operators.

The second chapter develops tensor algebra in a euclidean space, first by the use of cartesian coordinates and then more generally. The fundamental tensors are introduced. In the third chapter, linear vector functions are considered. The connection with second order tensors is exhibited. Special homographies, decomposition, and invariants are discussed.

The next two chapters concern themselves with tensor fields in euclidean and Riemannian n-dimensional spaces, respectively. The latter chapter also contains some material about non-Riemannian spaces such as the space defined by the Weyl connection. Differentiation of vectors and tensors, the Riemann tensor, Gaussian curvature, divergence, gradient, curl are among the topics considered.

The preceding results are used to develop the differential geometry of a surface and of a Riemann space in the sixth and seventh chapters, respectively. Aspects of the subject which are treated are the geometric properties of the first and second fundamental forms, parallelism, geodesics, curvature, asymptotic lines and lines of curvature, congruences.

The last three chapters deal with various aspects of theoretical physics. The statics and dynamics of deformable continua including elastic bodies, fluids, plastic continua are developed in Chapter VIII. The following chapter contains a discussion of electromagnetic fields and includes Maxwell's equations, wave propagation, the Lorentz transformation, the energy tensor. An outline of the theory of relativity, both restricted and general, is given in the last chapter. Among the topics discussed are inertia, gravitation, energy, statics, dynamics, cosmology.

A bibliography and an adequate index are given at the end of the book.

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