

mentary treatment of this subject which explains the numerous subtleties involved would be very welcome.

In the fourth chapter the author turns to the theory of surfaces and discusses their intrinsic properties. The usual topics are discussed including total curvature, the Gauss-Bonnet Theorem, parallel displacement, and special nets. This treatment continues in the fifth chapter which discusses geodesics, surfaces of constant curvature, parallel curves, Liouville nets, and conformal mapping.

The extrinsic properties of a surface such as lines of curvature, asymptotic lines, Meusnier's Theorem and Dupin's Theorem appear in chapter six. All of this is done by Cartan's methods and the exercises present the same theory in Gauss's notation and then in tensor notation. The chapter also includes a discussion of the rigidity and bending of surfaces.

The final chapter treats minimal surfaces and the problem of Plateau. Appropriately Blaschke introduces complex coordinates and complex geometric elements, so that an understanding of this chapter requires a knowledge of the theory of functions of a complex variable.

CARL B. ALLENDOERFER

*Supersonic flow and shock waves.* By R. Courant and K. O. Friedrichs. New York, Interscience, 1948. 16+464 pp. \$7.00.

This book is an excellent up-to-date account of the related problems of supersonic flow and non-linear wave propagation. Its content ranges from theory of hyperbolic partial differential equations to the practical problems of flow in nozzles and jets.

The point of view with which this book is written is best described by the words of the authors: "The book has been written by mathematicians seeking to understand in a rational way a fascinating field of physical reality, and willing to accept compromise with empirical approach." This rational approach is extremely valuable in such a field, where convenient but inaccurate concepts are often found to creep into existing literature. For example, in other discussions, the concept of a Mach line or a characteristic is sometimes introduced by associating it with a small disturbance. While this is no doubt a convenient way to discuss many properties associated with the characteristic, it sometimes leads to the erroneous concept that a characteristic is a line of disturbances. Again, in other discussions, the use of characteristics is often treated so closely with the numerical method of step-by-step integration of a supersonic flow field, that there is a danger of taking the latter as an essential part in the method of characteristics. In this book, all these misleading discus-