

The book should prove valuable for physicists and engineers with a limited mathematical background who wish to acquire quickly a working knowledge of elliptic functions.

W. SEIDEL

Space-time structure. By Erwin Schrödinger. Cambridge University Press, 1950. 8+119 pp. \$2.75.

In this book Professor Schrödinger reviews some of the main ideas underlying Einstein's theory of gravitation and the mathematical apparatus for expressing these ideas. The entire book is written in a clear and interesting manner. The main ideas of differential geometry which are needed for an understanding of the theory of relativity are expounded in a simple and lively fashion. The author develops his subject in "three stages, namely, (1) when only general invariance is imposed; (2) when in addition an affine connection is imposed; (3) when this is specialized to carry a metric." The discussion is organized in three parts corresponding to these stages.

Part I is concerned with tensor algebra and invariant integrals. Part II deals with covariant differentiation, parallel displacement, the curvature tensor, geodesics, and a chapter on the hypotheses about gravitation. Part III deals with affine connections derivable from metrics, the meaning of the metric according to the special theory of relativity, conservation laws and variational principles, and generalizations of Einstein's theory.

The last chapter deals with two recent attempts to formulate a unified field theory, one by Einstein and one by the author himself. These theories are given in a brief outline form and fundamental questions concerning them are not discussed. Thus the physical interpretations of the various quantities entering in these theories is not stated nor is there any discussion of the consistency of the equations resulting when the field equations are supplemented by conditions which would determine quantities left arbitrary in the existing theory. This latter question is of paramount importance in the latest formulation of the "Einstein-Strauss-theory." (See Appendix II in *The meaning of relativity*, 3d ed., by Albert Einstein, reviewed below.)

In spite of the short treatment of the newer aspects of the subject which still abounds with difficult and unresolved questions, this is an interesting and stimulating book, especially for the "general" reader.

A. H. TAUB