

some simple applications. The inversion problem is studied for the cases of genus zero and genus unity.

The chapter on the reduction of singularities is very noteworthy. Here one finds a thorough treatment of the problem of reducing the singularities of an algebraic curve, by means of a birational transformation, to double points with distinct tangents. This question is examined for the projective plane, and also for the space of analysis. In this chapter, as in the chapter on divisors, the influence of Bliss's own researches is seen.

A final chapter illustrates the general theory with some examples. In particular, constructive methods are given for treating algebraic relations which are of the third degree in one of the variables. There is a good bibliography.

The arithmetic theory of algebraic functions is a good thing. In making its study easy, Bliss has performed a service which will win him the gratitude of an ever increasing number of readers.

J. F. RITT

*Theory of Elasticity.* By S. Timoshenko. New York, McGraw-Hill, 1934. 416 pp. and 203 figures.

This is one of the Engineering Societies Monographs published under the editorial supervision of a committee representing four national engineering societies.

The subject of the theory of elasticity has become so large that no one book can cover the entire theory and applications. In fact some of the older books such as Love's *Theory of Elasticity*, although not covering many topics now regarded as essential, have reached such encyclopaedic proportions as to render them unsuitable as texts. The present book is the best general text the reviewer has seen in English. In comparison with other books of Professor Timoshenko on the same subject, it is more theoretical and less detailed in engineering applications.

After an introductory chapter concerned with Hooke's Law and the general relations of stress and strain, the following five chapters, constituting nearly half of the book, are restricted to cases of plane stress and plane strain. The principal concepts are thus introduced with the simpler mathematics of these two-dimensional fields. The more general analysis is then given, and applied to cases of bending and torsion in which three-dimensional tensors play an essential role. The last chapter is concerned with the propagation of waves in elastic media. For cases of steady vibration the author refers to his book on *Vibration Problems in Engineering*.

A feature of the treatment is the more general use of components of stress rather than components of displacement, the differential equations being furnished by the body force and compatibility conditions. In the common case of known surface stresses, the boundary conditions are thus expressed by relations between the unknown functions instead of relations between their derivatives. In comparison with the older books much more attention is given to experimental methods, such as photo-elastic and soap film measurements, and hydrodynamic and electrical analogies.

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