

Stress Concentrations Around Holes. By G. N. SAVIN. Pergamon Press, London, 1961. 430 pp., \$15.00.

This book was originally published in Russian in 1951. The English translation is based on a 1959 edition and contains additional material suggested by the author. Much of the material presented is the result of work done by the author and his students since 1936. The results of other workers in the field are also presented.

The book is devoted to extensive theoretical analyses dealing with stress concentrations around holes in plates or beams. Most of the work is concerned with elastic deformations, but includes some sections which deal with plastic deformation.

The first part of the book is devoted to a review of the theory of elasticity, along with the mathematical tools used in analyzing problems of general engineering interest.

The stress concentrations around holes of many geometries in isotropic sheets subjected to various loading conditions are considered rather thoroughly. Nonisotropic materials are treated in a smaller number of cases. Considerable work is presented on plates and beams reinforced with elastic rings. Special cases where the elastic limit is exceeded near a hole are also considered.

In the last chapter of the book the author compares some of his theoretical work with available experimental photoelastic data. Correlation between theoretical and experimental work is good.

In general, the book is well organized and the material is well presented. Due to its length and complexity, the

book is not easily readable and will be beyond the mathematical ability of many engineers. The material has been presented in a series of independent sections which may be read without reference to the remainder of the book. In addition, the results have been summarized in the form of simple formulas, graphs, and tables and can be applied without delving into the theoretical details.

This book is the most extensive theoretical work available on stress concentrations around holes under conditions of plane stress and plane strain and must be considered a major contribution in the field of elasticity.

For light, efficient, and reliable design, stress concentrations must be considered and thus this book could prove to be a powerful tool for the designer.

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(About the Reviewer: Mr. Patterson is currently Supervisor of Mechanical Engineering of the Nuclear Power Department at Allis Chalmers Manufacturing Company. He is responsible for mechanical design and development of reactor components including pressure vessels, internal structures, control rod drive mechanisms, and other components. He received his B.S. in Mechanical Engineering from Colorado State University and his M.S. in Nuclear Engineering from the University of Michigan. He has done additional graduate work in Engineering Mechanics at the University of Wisconsin-Milwaukee.)