The final section on fatigue of high pressure vessels contains four papers. The first of these presents the application of fatigue crack growth in the analysis of an isostatic press. The second paper gives a thorough treatment of the problems associated with the fatigue design of threaded end closures. The third paper deals with the effects of changing production methods on the fatigue performance of autofrettaged cylinders that fail from the outside surface. And the final report is that of a rather extensive experimental study to measure and predict the fatigue performance of autofrettaged and outside diameter notched cylinders.

J. A. Kapp

Design and Analysis of Piping, Pressure Vessels, and Components, ASME Special Publication PVP-Vol. 120, ASME, New York, 1987.

This publication is comprised of technical papers on various topics of interest to the pressure vessels and piping industries and includes international contributions by authors from Canada, the People's Republic of China, France, the Federal Republic of Germany, Japan, the United Kingdom, and the United States of America. It is separated into three categories:

Piping and components – design and analysis,
Pressure vessels and components – design and analysis,
Stress classification with code and impact on design.

Most of the papers were prepared for engineering problems, topics and codes associated with some specific industry. However, the subject matter of the various papers can be applicable to analogous situations for the chemical, petrochemical, nuclear and other industries as well.

W. E. Short

Flow-Induced Vibrations – 1987, ASME Special Publication PVP-Vol. 122, ASME, New York, 1987.

This volume contains papers presented at the annual symposium in flow-induced vibration sponsored by the Operations, Applications and Components Committee of the Pressure Vessel and Piping Division of ASME. Altogether, 20 papers from four countries cover a wide range of flow-induced vibration problems in the power generation, process and marine industries. As before, almost half of these 20 papers deal with the dynamics of tube arrays in heat exchangers – probably the most complex of all the flow-induced vibration problems. The editors are particularly pleased to see that, for the first time, there were substantial participation from the People's Republic of China.

The papers can be crudely divided into four categories. Understandably, no clear boundary can be drawn for every paper and some overlapping is unavoidable.

Cross-Flow Induced Vibration of Tube Arrays. Seven papers address this subject. Contents range from fundamental studies to applications of the technology to solving operating problems in the field.

Turbulence-Induced Vibration. Four papers cover this subject, with contents ranging from numerical simulation of the forcing function in tube arrays to response prediction of tubes and shells.

Axial and Annular Flow-Induced Vibration. Five papers present axial flow problems addressing vibration of pipes conveying fluid, large shells exposed to turbulent boundary layers and leakage flow-induced instability of slip joints.

Fluid Structure and Support-Structure Interaction Effects. Four papers address this subject, which not only includes the much discussed hydrodynamic mass and damping effects but also the all-important and often neglected effects of support-structure interaction.

The papers contained in this volume not only represent the latest advances in the state-of-the-art, but also aim at practical applications to design and troubleshooting in the field.

M. K. Au-Yang
S. S. Chen

Design and Analysis of Composite Material Vessels, ASME Special Publication PVP-Vol. 121, ASME, New York, 1987.

So much has been written about composite materials that it would be superfluous to state the reasons for their use. Nevertheless, there are still many unresolved problems associated with these materials, and hence papers and volumes such as the present one will continue to be published. The simple fact is that the promises and advantages of composite material technology extract a payment of more sophisticated analyses, understanding, and failure modes than would be encountered for more conventional materials.

The present volume is a continuation of the long list of literature addressing the special problems associated with composite materials and their use as structural components. This volume contains what we believe to be significantly new and important information pertinent not only to composite material technology, but also to beam, plate, and shell structures. The fundamental motivation for the use of composites in pressure vessels and pipings is to combine the lightweight materials with high stiffness and strength in a possibly high-stress high-temperature environment. Both macro- and micromechanics will be considered in this volume and emphasis will be placed on the design and nonlinear analysis of composite material vessels.

The papers in the technical sessions can be roughly grouped into two categories: (*i*) macromechanical behavior involving complicating effects such as transverse shear and nonlinear analysis; and (*ii*) micromechanics and failure analysis. In the first categroy, Drs. O. O. Ochoa and T. J. Kozik presented a linearly exact displacement formulation to evaluate the interlaminar transverse shear and normal stresses of these beams. Drs. F. Gordaninejad and A. Ghazavi presented a high-order shear-deformable beam theory involving parabolic distribution of shear strain through the beam thickness. Dr. E. E. Spier presented experimental data on the instability of thin-walled laminated panels and cylinders under compression. Dr. D. Bushnell examined the minimum weight designs of laminated composite flat or curved stiffened cylindrical shells using the PANDA2 computer program. Drs. R. K. Kapania