

Introduction

This symposium was the third on the subject of cavitation and impingement erosion to be sponsored by ASTM, the first two having been held in 1961 and 1966, respectively. The advent of modern engineering systems such as supersonic aircraft and missiles, high-speed naval craft, high tip-speed steam turbines, and liquid metal space power plants has stimulated widespread interest in the phenomenon of erosion of materials by cavitation or impingement. This interest is international in scope, as witnessed by similar symposia held in Great Britain in 1965 and in Germany in 1965 and 1967.

The most significant contribution of these symposia has been the establishment of a common forum for scientists and engineers working on cavitation and impingement erosion and the exchange of useful knowledge. As a further step we focused the attention to a specific problem and selected the theme for this symposium as characterization and determination of erosion resistance. This was reflected in several papers presented in this symposium. Some have made significant advances toward definition and characterization of erosion resistance in its own right and toward establishing statistical and physical correlations between this and other material properties.

The ASTM round-robin tests using vibratory cavitation and liquid impact facilities and the comparative erosion tests of steam turbine blade materials in Europe are examples of the recent attempts toward standardization of existing test methods. Besides, new testing techniques also have been advanced. Hopefully these efforts will lead toward the generalization of erosion test results so that they can be applied to the prediction of service performance and toward quantitative and qualitative understanding of the erosion process. A significant number of papers have concerned themselves toward the understanding of the process of erosion itself. It was highly encouraging to note the international response to this symposium and the most enlightened discussions that followed the presentations of papers. These discussions are documented fully in this volume. It is our belief that this symposium has contributed greatly to the scope of the ASTM-G-2 Committee on Erosion which includes "the promotion of knowledge in the area of erosion of materials by cavitation or impingement; the development, evaluation, and correlation of test methods; and the establishment of standards."

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