

PROCEEDINGS OF THE 1962 HEAT TRANSFER AND FLUID MECHANICS INSTITUTE

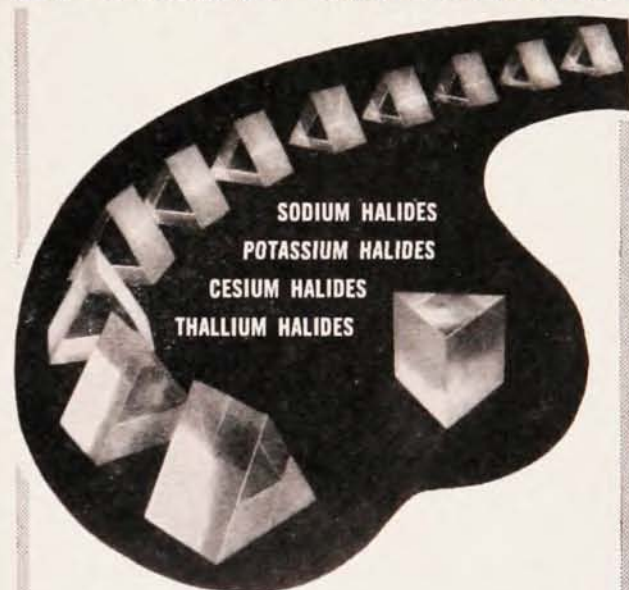
*Edited by F. Edward Ehlers,
James J. Kauzlarich
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New and basic contributions to fluid mechanics, heat transfer, and related fields are contained in this collection of papers presented at the 1962 meeting of the Institute. \$8.50

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istics of two of the materials prepared under these conditions, diamond and the cubic form of boron nitride.

The field of geophysical studies, which has traditionally made wide use of high-pressure techniques, is represented in three of the papers, and several theoretical papers appear concerning thermodynamics, transformation rates and the state of matter at high pressures and temperatures.

The largest number of papers deals with the physics of high pressure, most of them concerned with true liquid-pressure transmitting media and a range to 30 kilobars. A notable exception is the excellent paper by Drickamer on studies of optical phenomena at pressures to 200 kilobars.

Probably the greatest interest of the conference was elicited by Kennedy who discussed a series of careful experiments which have the effect of reducing considerably some of the fixed-point pressures which have been assumed by most investigators in calibrating equipment for pressures greater than 25 kilobars.

The work discussed by Vereschagin reveals the diversity and intensity of the Russians' program in high pressures.

In summary, material presented in these proceedings provides an excellent progress report on the entire spectrum of activities in the field.

Gases at High Densities and Temperatures. By Yu. N. Ryabinin. Transl. from Russian by H. K. Zienkiewicz. 52 pp. Pergamon Press, Inc., New York, 1961. \$4.50. *Reviewed by Stuart A. Rice, University of Chicago.*

THIS is a difficult review to write because I can find no reason for the publication of this book. I cannot escape the feeling that the publishers are exploiting both the still prevalent "Russian hysteria" and the well-known large library market. Certainly at a price of nine cents per page the publishers' apology for poor reproduction falls flat. But the most important question is simple: Why was the book published?

The monograph deals with some experiments on the rapid compression of gases. Too few actual details of the apparatus are given and of the scanty references many are to very old literature. Some pertinent modern references are not cited. From the figures given, the method does not seem capable of achieving very high accuracy. In general, the level of theoretical analysis of the data obtained is extremely low and scarcely worth bothering with. To top off this entire story, the author has done many of his experiments on industrial argon containing some six percent of impurities (N_2 , H_2O , O_2) and on air. In all, I can think of almost no one to whom I could recommend this book.

There is, I believe, a genuine need for an increased availability of translations of Russian literature. However, such a program, to be effective, let alone economical, must be conducted with good sense and taste.



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At present, when many private organizations produce translations for profit, it would seem that the discipline of good taste can only be imposed by economic failure. I believe it is pertinent to re-examine the current translation program and at every point to discourage useless publications. In my opinion this book should never have been translated and its appearance reveals some very interesting facets of the publishers' policies.

Mechanical Behavior of Materials at Elevated Temperatures. John E. Dorn, ed. 529 pp. McGraw-Hill Book Co., Inc., New York, 1961. \$14.50. *Reviewed by E. H. Dill, University of Washington.*

A SERIES of lectures given at the University of California on the nature of dislocations and their behavior under stress is the basis for the fifteen chapters of this book. Each chapter is written by a recognized authority. The stated purpose of this lecture series was to point out to scientists and engineers the physical basis of the behavior of materials, with emphasis on applications of the theory of dislocations.

The first few chapters explain the principles of dislocation theory. Several chapters are then devoted to the theory of metals and their sources of strength at normal and slightly elevated temperatures. Some important areas of application, including thermal shock, creep, and fatigue, are discussed in the final chapters.

This is not a suitable textbook, but it is a valuable source of information for anyone interested in understanding the physical origins of the mechanical properties of metals.

Forces and Fields. The Concept of Action at a Distance in the History of Physics. By Mary B. Hesse. 318 pp. Thomas Nelson and Sons Ltd, Edinburgh, 1961. 35s. *Reviewed by R. B. Lindsay, Brown University.*

MUCH of the historical development of physics may be looked upon as an intellectual struggle between the contrasting views that physical phenomena are best described and interpreted by the motion and interaction of particles on the one hand or by the behavior of continuous media on the other. Numerous books have been written to interpret the views of the founders of physical theories along these two main lines, including such popular works in English as E. T. Whittaker's *History of the Theories of Aether and Electricity* (1951, 1953) and E. A. Burt's *The Metaphysical Foundations of Modern Physical Science* (1932). The volume under review, by a well-known British woman philosopher of physical science, provides a continuation of this tradition in terms of a historical and philosophical examination of the concept of action at a distance. This notion gave great trouble to our predecessors in the construction of physical theories. Even Newton, whose principle of universal gravitation in the form usually employed necessarily