of the theory of cylindrical functions and to use these mathematical methods to solving applied problems.

The edition of this monograph is excellent and to our mind it will be of great use for specialists in applied thermal physics and designers. It is a pity that only a small number of copies of this monograph is published.

K. I. STRAKHOVICH

Fundamentals of Radiation Heat Transfer: A. G. BLOKH, Gosenergoizdat, Moscow–Leningrad, 1962, 330 pp.

AT THE present time engineers and students of senior and post-graduate courses concerned in their work with the problems of radiative heat transfer and corresponding engineering calculations often use for their work separate sections of general books available on heat transfer.

Rare monographs, specially devoted to radiation heat transfer, are either out of date or elucidate only separate narrow problems. In general, in books on heat transfer chapters dealing with radiation are usually incomplete. They contain pure phenomenological presentation of the principal radiation laws, methods for calculation of the simplest cases of radiation heat transfer of bodies in a transparent medium, and general data on radiation of triatomic gases.

The problem of radiation of dusted media and luminous flames, methods for calculation of furnaces, etc. are almost not discussed and relevant material is completely unavailable. Methods for measuring radiant flows, temperature and emissivity of flame and some other measuring technique problems are badly elucidated.

These works are not systematical text-books which are to help readers to study profoundly the fundamental problems of the radiant transfer theory and its application to the solution of many problems in thermal engineering.

Therefore, publication of *Fundamentals of Radiation Heat Transfer* by A. G. Blokh—designed for thermal engineers, students of senior and post-graduate courses of thermal engineering—is a very welcome event.

This book, filling an urgent want in literature on heat transfer, proves of tremendous value and interest.

The book contains seven chapters discussing all the basic problems of radiation heat transfer which are extremely important for various branches of thermal physics and thermal engineering.

Chapter 1 deals with the basic laws of black body radiation. The second chapter is devoted to radiation of non-black bodies.

Chapters 3 and 4 deal with fundamental problems of radiative heat transfer in transparent absorbing and dispersed media. In the fifth chapter experimental data on turbid media radiation are presented, including the data of the author's original works on dusted flows.

The sixth chapter is devoted to heat transfer in furnaces of steam boilers. Here experimental data of the author on absorbability of a dust coal torch are presented which show the necessity to revise some methods for heat-transfer calculation in boiler furnaces such as for calculation of emissivity of a boiler furnace.

Chapter 7 presents some principal problems of experimental methods for radiative heat-transfer investigations.

The book is very well written, both lucid and concise. The author has found an adequate approach to presentation of complicated problems of radiative heat transfer. In this book greater attention is given to physical mechanism of radiative heat transfer than in other available engineering works on heat transfer.

Therefore, the book by A. G. Blokh may be of great use for different engineering investigations, for designing high temperature thermal engineering apparatuses, and for the choice of special radiation measuring instruments, etc. In all these cases one should know how radiative heat transfer will change with these or those working conditions (e.g. when new fuel or conditions of burning are used).

This is the first systematic presentation of vast material on absorption and dispersion of heat radiation of solid particles, spectral and integral absorptivity of dusted flows, radiation of luminous flames, etc. available in thermal engineering literature.

Derivation of the Planck formula according to Einstein appears to be sound. Peculiarities of dielectrics and metals are discussed fairly completely for thermal engineers. A detailed analysis of heat-transfer problems in dispersed media is given.

The book contains a wealth of experimental facts on various problems of radiative heat transfer, such as radiation of turbid media, which are treated in the book from a fairly elementary and qualitative point of view.

Thermal engineers will find much of interest and value in numerous materials of different works and papers which are presented in the book in the form allowing the reader to profoundly study recent data on the considered problem.

The author makes an attempt to give the reader an idea of physical nature of semi-transparent media radiation and in most cases his attempts are successful. Furthermore, the author avoids long and tedious calculations of geometrical character with simplified and often physically unsound notions of the essence of the processes of radiative heat transfer.

Heat transfer by radiation is of great importance in the operation of various thermal apparatuses such as steam boilers, furnaces, etc. Therefore the author is quite right to include a chapter on heat transfer in boiler furnaces describing specific radiation processes in industrial plants and possibility to use the general regularities and presented experimental materials for calculation of heat transfer by radiation.

Publication of the book under review, which is an authoritative text-book for all workers in this field, is an important event.

This valuable monograph on heat transfer is a great contribution to the general theory of heat and mass transfer.

I. I. PALEYEV