

**ENGINEERING APPLICATIONS
OF HIGHER MATHEMATICS.
PART III. PROBLEME ON
THERMODYNAMICS**

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Engineering Applications of Higher Mathematics. Part III. Probleme on Thermodynamics by
V. Karapetoff

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V. KARAPETOFF

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V. KARAPETOFF

PART III.
PROBLEMS ON THERMODYNAMICS

FIRST EDITION
FIRST THOUSAND

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PREFACE TO PART III.

THE third part of the work, now offered to the profession, contains problems in thermodynamics of perfect gases and saturated steam. The first part contains problems in machine design, the second part problems in hydraulics and the remaining two parts are devoted to mechanics of materials and electrical engineering respectively. Thus in using this work a student or an engineer who wishes to review calculus or analytics, or to acquire facility in applications of higher mathematics to engineering problems, may select at first the part of the work which deals with problems in that branch of engineering with which he is most familiar, or in which he is particularly interested.

The book as a whole is not intended to bring out anything new, either in mathematical methods or in practical deductions. The author's aim was simply to collect and to arrange in a systematic way the various applications of analytic geometry and of calculus, already in use. The book may be called a summary of the most common engineering applications of higher mathematics, or a mathematical cross-index to engineering text-books. It fulfills its purpose if it saves the teacher the trouble of consulting many engineering books for the purpose of selecting a few mathematical problems for his students. The author also hopes that the book may stimulate interest in higher mathematics among his fellow engineers and thus help to a better understanding of some intricate relations where at present "rule of thumb" prevails in design.

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The reader will find the author's views on teaching mathematics to engineering students in the preface to Part I and in the Dialogue following that preface. He is also referred to Part I for a list of reference works on mathematics and for an Appendix entitled "What a Senior in Engineering ought to know about Mathematics."

The author wishes to acknowledge gratefully the assistance of his former students, Mr. J. G. Pertsch, M.E., Instructor in Electrical Engineering at Cornell University, who read the manuscript on thermodynamics, and Mr. Fred G. Switzer, M.M.E., who solved most of the problems. Mr. A. C. Stevens, M.E., Instructor in Cornell University, read the proofs, and made a number of valuable suggestions.

CORNELL UNIVERSITY, ITHACA, N. Y.

January, 1916.

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