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Blakiston's science series. Outlines of applied optics by P. G. Nutting

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OF

APPLIED OPTICS

BY

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WITH 73 ILLUSTRATIONS

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PREFACE.

These outlines of applied optics deal with optical instruments and optical measurements from the standpoint of sensibility and precision. The first three chapters treat of instruments for forming images; the remaining chapters, special instruments for analyzing light and determining the properties of materials. The keynote throughout is the question of securing the best possible results in optical work. It might be well classed as optical engineering or technical optics, but applied optics is a broader term.

Applied optics is practically untaught in any university. By the student of pure optics, optical instruments are regarded as mere tools to be simplified and ignored rather than studied. The physical properties of the eye and photographic plate, essential parts of every optical instrument, are largely unknown and disregarded. Color and colorimetry rest practically where Maxwell's great contributions left them. Light itself is not even precisely defined.

No class of engineering offers higher prizes than the different branches of optical engineering-lens design, illuminating engineering, colorimetry, photography, radiometry, pyrometry, etc. No richer field awaits the investigator versed in pure optics than those of applied optics, and a student can find no more alluring, promising, or brain racking problems than are to be found in these neglected fields. There are ample reasons why applied optics should be taught as such in at least a few of our leading universities, and it is hoped that this work may add strength and unity to such tendencies.

But the book has been prepared for the worker in applied optics rather than the student; for the men in the field

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designing instruments, measuring color, examining eyes, identifying illuminants, etc., who may find a suggestion of how to obtain better results or ready information on nearly related subjects.

A full treatment of applied optics of the scope here chosen could be adequately treated only in a number of volumes by a dozen specialists, but as the time is not yet ripe for so extended a treatise, it was thought best to prepare a briefer work of the same scope to serve as an entering wedge. More than all else, it is hoped that this book will stimulate work in the many almost unworked fields within its borders so that when the time is ripe, the material for a more pretentious treatise may be available.

The material for this work was obtained almost entirely from the original papers to which references are made. Descriptions of instruments described in text-books are omitted. In the first chapter the well known works of Dennis Taylor and of Whittaker are freely drawn upon. I am indebted to Mr. E. D. Tillyer, Dr. F. E. Wright, Dr. W. W. Coblentz and other colleagues for careful reading of parts of the manuscript.

P. G. NUTTING.

WASHINGTON, D. C.

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