THE LENS: A PRACTICAL GUIDE TO THE CHOICE, USE, AND TESTING OF PHOTOGRAPHIC OBJECTIVES

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The Lens: A Practical Guide to the Choice, Use, and Testing of Photographic Objectives by Thos. Bolas & George E. Brown

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A Practical Guide to the Choice, Use, and Testing of Photographic Objectives

BY

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PREFACE.

THE aim of this book is twofold—to explain the properties of the photographic lens without the aid of mathematical formulæ, and to give instruction in the selection and proper use of a lens. Chapters I. to VII. are devoted to the first of these objects, and are modelled on the lines of that excellent text book, *Photographische Optik*, by Dr. Adolf Miethe, of which, unfortunately, there is no English translation. Chapters VIII. to XVII. concern the practical use of the lens, but should be studied in connection with the first part of the book. Other works on photographic optics, to which the student is referred, and to which, as he will see, the authors are considerably indebted, are as follows:—*The Technics of the Hand-Camera*, by W. B. Coventry, M.Inst.C.E., which contains a specially commendable treatment of "depth of focus"; *Contributions to Photographic Optics*, by Otto Lummer, translated and augmented by Silvanus P. Thompson, F.R.S., which gives the best account of the services of Jena glass in photographic optics; and *Telephotography*, by T. R. Dallmeyer; *Practical Notes on Telephotography*, by R. & J. Beck, Ltd.; and *A Monograph on the Nature and Application of the Telephotographic Objective*, by Dr. P. Rudolph, all of which amplify what is here said on telephotography; Mr. Dallmeyer's work being an exhaustive treatise.

Thanks are here tendered to several persons and firms for the use of blocks, viz., to R. & J. Beck, Ltd. (for fig. 10); J. H. Dallmeyer, Ltd. (fig. 63); Ross, Ltd. (figs. 73, 74, and 75); Carl Zeiss (fig. 109); W. Thomas (figs. 114 and 115); and Miss Evelyn Boden (fig. 117). Professor F. J. Allen has permitted the reprint of the notes on angle of view, and has contributed some others, and Mrs. Catharine Weed Ward has supplied the illustrations on pp. 109 and 110.

LONDON, *April* 1902.


Procedam

CONTENTS.

THE LENS.

CHAPTER I.

HOW THE LENS FORMS AN IMAGE, ETC.

[1 *How a Lens works.*—Let us bear in mind that a lens or a pinhole —for we are going to use a pinhole to help us to understand the lens —does not "form" the image we see on the ground glass. The rays of light from the object do that. The lens sifts or alters these rays, permitting a few to do what many could not. First of all let us get a clear idea of what is happening when a camera is set up before, say, a landscape.

The objects in the landscape are lighted by the sun. They are visible to us because they reflect the sun's light to our eyes—*always in straight lines.* In text-books on light you will learn that light follows a certain law when it is reflected—viz., that the angle of incidence equals the angle of reflection (*i.e.* in fig. 1 dotted angle on

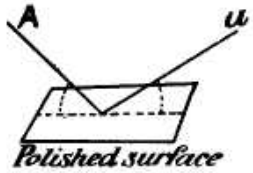

FIG. 1.

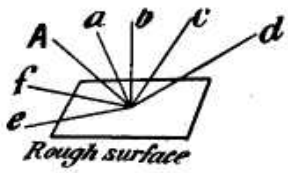

FIG. 2.

right equals dotted angle on left)—but this is true only of polished surfaces like mirrors, metals, etc. If all objects in nature reflected light according to this optical law, we should see things only when they were in certain positions, just as we see the brilliant reflections from a sunlit piece of glass on a wall or from the spangles on a ballet