ON THE CHOICE AND USE OF PHOTOGRAPHIC LENSES

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OF

Photographic Lenses.

BY

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PORTRAIT LENSES.

Success in Portraiture will always depend, in a great measure, upon the *right choice* and the *proper use* of the lens. A few hints on these two points may prove of service to the photographer.

Portrait lenses are either more or less rapid in action as their diameters are larger or smaller, or as their focal lengths are shorter or longer. The diameter of a lens here always implies its *actual* working aperture, and the focal length, its *equivalent* focal length. Directions for ascertaining these are given in the appendix.

The focal length of a lens regulates the *size* of the picture, and the diameter expresses its *speed* or rapidity of action. Having fixed upon the size of picture required to be taken, the next thing to be determined is the most suitable focal length of the lens. This, however, involves the

prior determination of the *distance* at which to place the subject; for, as every photographer knows, the placing of the lens nearer to the subject increases the size of the picture, and *vice versâ*. The question then arises,—What is the proper distance at which to place the subject from the lens? In answer it may be safely asserted, that it should, as a rule, be not less than 12 feet, nor perhaps more than 24 feet. For if less than this, the resulting picture will generally be defective both in definition and perspective, because the lens producing it will be of too short a focus; and if the distance is greater, the resulting picture will probably be deficient in relief or roundness. This, because the atmosphere in our towns is seldom quite clear from fog or haze,* and the greater the distance between the lens and subject, the more obviously will this haze be reproduced in the picture.

A medium distance, therefore, of from 16 to 20 feet, should be chosen. Card portraits are generally taken with lenses of such focal lengths as to require this distance, and to this circumstance may be attributed the generally pleasing appearance of these portraits, as compared to the old quarter plate pictures, which were mostly taken with lenses of much shorter focal lengths.

* The writer refers, of course, to towns in England.

For a distance, then, of from 16 to 20 feet between the lens and subject, the *equivalent* focal length (not the back focus) of the lens, for a given sized plate, should be about *twice* that of the largest side; that is, for a $4\frac{1}{4} \times 3\frac{1}{4}$ plate, the card size, the focal length should be $4\frac{1}{4} \times 2$, or equal to $8\frac{1}{4}$ inches, *i. e.*, No. 2 B Lens; for a 6×5 plate, the cabinet size, 6×2, or equal to 12 inches, *i. e.*, 3 B, 2 A, or better still, 3 A Lens; for a 10×8 plate 10×2, equal to 20 inches, *i. e.*, 4 A Lens, and so on.

In confirmation of this, I may mention that the much admired 10×8 pictures of M. Adam-Salomon are taken with a 20 inch focal length lens.

The distance between the lens and subject here given requires a studio of at least 30 feet in length; and photographers who have not this space are compelled to use lenses of shorter focus, such as the 1 B [long] or 1 B for cards, and the 1 A for cabinets; but they labor under disadvantages, as regards instrumental aid, which no amount of skill can possibly compensate.

Having determined the *focal length* of the lens for a *given sized plate*, the next thing requiring consideration is its *diameter*, or its rapidity of action. As a matter of course, every photographer wishes to possess a quick-acting lens, and not only this, but flatness of field, and great

"depth" of focus or definition, forgetting all the while that these qualities are almost diametrically opposed to each other; for rapidity can only be had at a corresponding sacrifice of flatness of field and depth of definition. Thus, of two lenses of the same focal length, and both perfectly corrected for spherical aberration, the one of 2 inches will have twice the depth of another of 4 inches in diameter; whilst the latter, in turn, is four times quicker in action than the former.

Again, of two lenses of the same rapidity (*i. e.*, having the same ratio of aperture to focal length), the one double the focal length of the other will only have one quarter its "depth." Thus, for example, a card lens of 9 inches focal length and $2\frac{3}{4}$ in. aperture, producing a card picture at 20 feet distance, will sufficiently define accessories 12 inches in front and 12 inches behind the figure, or the point focussed upon, or will have a depth of 2 feet; whereas, another lens of double the above dimensions, *i. e.*, of 18 in. focus and $5\frac{1}{2}$ ins. aperture, and worked at the *same distance*, will only have a depth of 6 ins., viz., 3 in. before and 3 in. behind the point focussed upon. This sufficiently explains that really quick acting lenses only produce satisfactory results when used for the smaller sized plates; but that they are useful, when so restricted, is suf-

ficiently evidenced by the charming instantaneous portraits of children by Mr. Faulkner, Mr. H. C. Heath, and others, taken with No. 2 C—perhaps the quickest acting lens extant.

For standing figures this lens requires stopping down, as explained in my Catalogue.

Hence the quick acting, or B Lenses, are only made for plates up to $8\frac{1}{2} \times 6\frac{1}{2}$. For larger pictures slower working lenses, capable of adjustment for diffusion of focus, are the only means for securing the requisite amount of depth of focus.

It may be stated here that for every-day work, for whole plate Portraits and beyond, perhaps the Patent A Lenses are the most suitable. They are nearly twice as rapid in action as the D Lenses; of great importance considered from a commercial point of view; for long exposure very often occasions a failure. Hence nearly all the first artists, as for instance Messrs. Blanchard, Briggs, Heath, Mayall, Mayland, Robinson, Slingsby, Wane, and others, constantly use these lenses for the ordinary demand of portraits; but for their extra size pictures, as for instance for those recently exhibited, the first-named artist uses No. 5 or 6 D.; Mr. Slingsby a No. 7 D.; and Mr. Crawshay, for the largest portraits, perhaps, ever taken direct, a No.

S D. Col. Stuart Wortley's large portraits were taken with a 22 × 20 Rapid Rectilinear Lens.

Thus much respecting the right choice of the lens; and now a few words regarding the proper use of it.

The lens, when attached to the camera, should be placed upon a *firm* stand, capable of adjustment as to height etc.; the cap should fit the lens loosely, so that its removal does not occasion tremor, or shaking of the camera. Cap the lens, and, protected by the focussing-cloth, carefully examine the interior of the camera to insure a perfect dark chamber. No bright object, such as the unblackened head of a screw, or a bright brass spring on the shutter, should be tolerated anywhere. The wood of the interior of the camera, also, should be coated with a *dead*, and not a shining, black varnish; and, better still, a number of diaphragms, according to the length of the camera, should be introduced, allowing the full cone, or pencil of light, proceeding from the lens, to fall upon the prepared plate uninterruptedly, cutting off all reflections from the sides of the camera. The larger the diameter, or the more rapid the lens, the greater the importance of the above remarks.

Always carry the slide containing the prepared plate under a focussing-cloth to the camera, and let this cloth remain on it when drawing up the shutter.