

A PHOTOGRAPH AND HOW TO TAKE IT

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A Photograph and how to Take it by A. A. Wood

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A Photograph:

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By "ONE WHO KNOWS."

EDITED BY

A. A. WOOD, F.C.S.

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THE late remarkable improvements in Dry Plate Photography have quite revolutionised this most attractive art. To many persons the expense, trouble, and stains of the Wet Process were so great and objectionable that photography came to be regarded as an occupation only suited to the professional. Most of these difficulties have been cleared away, and a tourist, with a small camera and a packet of dry plates, can now with ease and rapidity photograph any object of interest that attracts his attention, leaving the developing and fixing of his plates till his return home.

The following directions are intended for beginners in the art of photography, and though only one method of procedure is described, it is not meant that this is the only one by which perfection can be obtained. There are, in fact, many ways of obtaining the required results, and the practised photographer can always produce the best work by following the method to which he is best accustomed, but beginners are strongly advised to adhere exclusively to one formula until they have completely mastered it; then, but not before, they may, with some prospect of advantage, vary their course as circumstances may suggest.

THE APPARATUS.

This necessarily depends upon the sum the beginner wishes to expend, and the extent to which he intends to carry the practice of the art. From fifty shillings and upwards he can be furnished with a complete apparatus, including bellows camera, stand and lens, plates and chemicals. Of course he will not expect to find in the lower-priced apparatus the same facilities, perfection of workmanship, and beauty of finish afforded by the more costly sets, but with a proper degree of care very successful

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results may be obtained. Whatever be the class of apparatus determined upon, it is important that both camera and stand, while light and portable when closed, are firm and free from vibration when fixed up for use, and the fewer loose parts they have about them the better, as all such are apt to be lost or forgotten.

The following list includes only the articles absolutely necessary for producing a finished paper print:—Camera, Lens, Stand, Focussing Cloth, Dry Plates, Measuring Glass, Developing and Fixing Solutions, Dishes, Printing Frame, Sensitive Paper, Toning and Fixing Baths, Mounts, and Mounting Medium.

THE CAMERA.

A Photographic Camera may be roughly described as consisting of a box, at one end of which is the lens, the opposite end being closed either by the ground glass screen upon which the image of the object to be photographed is focussed, or by the dark slide which contains the sensitized plate.

So infinite is the variety of models and patterns that a full description would be impossible. First, there are what we term "Beginner's Cameras"; these have all the points necessary for the production of a picture, but lack the precision and rigidity of the higher class instruments.

Between these and the very best lies a range of confusing grades, both as to usefulness and price; and to any one choosing a camera the best advice is—fix in your mind the sum to be expended, and carefully inspect one or two patterns before purchasing. It is a great mistake to wander from shop to shop, for it is impossible to obtain a clear idea after seeing a score or more varieties of workmanship and finish. Let the choice be made among the goods of a house of repute.

The following are the sizes of the plates in ordinary use:—

$3\frac{1}{2} \times 3\frac{1}{2}$ Lantern Slide.	10×8 Extra size.
$4\frac{1}{2} \times 3\frac{1}{2}$ or "Quarter Plate."	12×10 "
$6\frac{1}{2} \times 4\frac{1}{2}$ or "Half " "	15×12 "
$8\frac{1}{2} \times 6\frac{1}{2}$ or "Whole " "	

"Inner Frames" or "Carriers" can be supplied to the dark slides, so that the smaller sizes of plates can be used in large cameras.

THE LENS.

A few words upon the Lens may not be out of place when it is remembered that upon its perfect adaptability to the work depends a great part of the perfection of the picture. Photographic Lenses may be broadly divided into two classes—the "Single Achromatic" and the "Achromatic Doublet." The requisite exposure of a plate depends upon the amount of light thrown by the Lens upon it, and this depends on the aperture of the Lens, the quantity of the light varying as the well-known law of the square of the aperture, so that all things being equal, a Lens with an aperture of one diameter will require four times the exposure of a Lens with an aperture of twice that diameter; this consideration points out the limit of the value of a Single

Achromatic, or View Lens. When very rapid exposures are required, we must have larger apertures than the Single Lens will allow, and to obtain these we must use the Doublet Lens.

The Doublet Lens is made in various forms to answer various purposes; but whether called a Rapid Symmetrical, Wide Angle, or Rapid Rectilinear, the principle of its construction is the same; a second lens is placed behind the first, and so shaped as to collect the rays which a single lens fails to utilize, and consequently increased rapidity is obtained. To sum up: If pictures of still life or general landscape views requiring moderate exposures are wanted, a View Lens will give fair results; but for pictures of moving objects, requiring short or instantaneous exposures, a Doublet must be employed. In selecting a Rectilinear or Symmetrical Lens, remember that its focus should about equal in length a line drawn across the longest diagonal of the plate to be covered. When it is desired to photograph a building in the distance, a lens of one size larger than that ordinarily used should be employed, or the subject will not be obtained in adequate size. If a Rapid Rectilinear lens is being used on a long focus camera, the same effect may be obtained by unscrewing the front combination, and using the back lens alone. For near objects, a Wide Angle lens should always be used. Besides the Rectilinear, and Wide Angle Lens, with which views and groups may be taken, and paintings and drawings copied and enlarged, there is the Portrait Lens, having a still larger aperture, and working with proportional rapidity. This may be used for view-taking, but it is necessary to stop down the aperture very much, creating objections which the Rectilinear combination is free from.

THE DARK ROOM.

A Dark Room is, of course, necessary, and for our use it must be *really dark*; the faintest ray of white light perceptible to the eye, after the observer has remained some few minutes in the room, will inevitably fog a rapid plate. The window, if window there be, should be nearly covered, a space of not more than a foot square being allowed to remain, and this must be shielded by two or more thicknesses of "Non-Actinic Medium." A Dark Room Lantern, which will yield a uniform light, is however recommended, as daylight is not always the same. The artificial light enables a better judgment to be formed of the progress of Development and the density of the negative. In order to test the condition of the Dark Room, put a plate in a dark slide, and after drawing out the shutter half-way, expose it for 30 seconds, at a little distance from the source of light. Then develop and fix as instructed further on. If the light be good, both halves of the plate will be perfectly transparent; if bad, the exposed half will be "foggy," in which case the light must be altered and re-tested.

The door of the room must fit quite tightly, and be provided with an inside fastening.

A shelf or two will be necessary and it is better to have a

sink with water laid on, but this is not an absolute necessity. A pail and small can of clean water will answer very well.

The importance of cleanliness cannot be overrated, and a towel should hang by so that the fingers may be dried, and no wet get to the dark slides or plate boxes.

Other little "dodges" will occur to the operator as he progresses in his work.

THE DRY PLATES.

Of these there are so many brands and rapidities that we will not confuse our amateur friend by attempting a description. This, however, is good advice:—At first use Slow or "Landscape" Plates, and keep to one make until a good picture can be produced. By degrees practice will enable the operator to try a more rapid plate, and make slight modifications in the strength of the Developer, etc.

For a beginner's use, the "Trafalgar" *Landscape* Dry Plate will be found most satisfactory, the advantage over other plates being due to their being slower, and less ready to fog through inexperienced handling and errors of judgment in exposure.

We will suppose now that the Dark Room is ready, and all requisite materials at hand, and the beginner ready to proceed to take the first picture. Take the Dark Slides into the Dark Room with the box of "Trafalgar" *Landscape* Dry Plates. Carefully open the latter, and transfer the plates to their proper position in the slides, film sides towards each sliding shutter. Handle the plate by its edges only, as finger marks are likely to show in the finished negative. Brush over each plate lightly with a camel hair brush (kept for that purpose only), to remove any dust from the film, which if allowed to remain would produce "pin-holes."

PICTORIAL EFFECT.

In taking a photograph, it should be remembered not only to select an interesting subject, but also to give considerable attention to the point of view from which the subject is to be photographed; for it is in this that the difference between the artistic and the mechanical photographer becomes manifest. In order to assist the judgment of the amateur, we give a few rules that should be attended to.

1.—Perhaps the first principle to be noted in landscape delineation, is that of the height of the horizon. For fine pictorial effect this should never be in the centre of the subject—but either above or below it.

If the subject requires a high horizon, it will be safe to keep it about two-thirds of the height of the plate; if it requires a low horizon, as for coast scenes, about one-third or three-eighths of the height of the plate.

2.—Avoid having each side of your picture alike.

3.—Have the subject well illuminated with properly balanced light and shade; should the shadows be too deep, the detail of the picture will be lost.

4.—Remember, a curved line is more pleasing than a straight line, and a pyramid is pictorially better than a square.

FITTING UP THE CAMERA.

Having set up the camera so as to secure the best point of view, observe, further, that the vertical lines are vertical, and horizontal lines are horizontal. This work is greatly facilitated by having a circular level fixed on the top of the camera. The next point to attend to is to carefully focus the image upon the ground-glass screen. In order to secure perfect accuracy in this operation, a Focussing glass, *having a very flat field of view*, should be employed. Wood's recently perfected "Aplanatic" Eyepiece, is very strongly recommended for this purpose. This being done, cover the lens with its cap, remove the screen, and insert the dark slide. Now cover the back of the camera with the focussing cloth, and carefully draw out the shutter of the dark slide; a few seconds being allowed to elapse, that the apparatus may cease to vibrate, uncover the lens and make

THE EXPOSURE.

Upon this being correctly timed everything depends, and the greatest pains should be taken to obtain the power of intuitively realising the required exposure. This power comes with observant practice, and only general remarks rather than rules can be made. In the first place always try to give a full, rather than a short, exposure. Over-exposure, skilfully treated, may give a passable negative, but under-exposure no skill can cure. It is well to learn how to count seconds. This is most easily done by fastening a small bullet to the end of a thin piece of string and suspending it upon a nail at $39\frac{1}{2}$ inches from the centre of the bullet. Each beat of this simple pendulum, when vibrating in a small area, will give a nearly accurate measurement of one second. By observing the vibrations it is possible to acquire the habit of counting seconds with fair accuracy. The Trafalgar Actinometer and Ackland's Exposure Scale will be found invaluable at this stage of the proceedings.

In order to assist the subsequent development of exposed plates, particulars of exposure, &c., should be entered in a "Photographer's Note Book."

WEIGHTS AND MEASURES OF THE BRITISH PHARMACOPŒIA.

The following weights and measures are used in Photographic Chemistry :—

WEIGHTS.

1 Grain	gr.	
1 Ounce	oz.	= 437.5 grains.
1 Pound	lb.	= 16 oz. = 7,000 grains.

Where a dram weight is given in a Photographic formula, its weight is to be taken as equal to 60 grains.

MEASURES OF CAPACITY.

1 Minim	min.	
1 Fluid Drachm	fl drm.	= 60 minims.
1 Fluid Ounce	fl oz.	= 8 fluid drachms.
1 Pint	℥	= 20 fluid ounces.
1 Gallon	℥	= 8 pints.