

sary sometimes to tilt the camera, and if the back were kept in the normal position the lines of the building would, instead of being parallel, be convergent.

There is now only one part of the apparatus we have not dealt with, and that is the dark slide. The dark slide is nothing more than a shallow box made generally to contain two sensitive plates back to back, with a piece of black card or blackened metal in between to prevent the light striking through from one plate to the other. There are two principal forms, the solid in which the plates are put in from one side, the first film or sensitive side downwards, then the separating card, and then the second plate film up. The other form of slide is what is called the book form, which opens at one end on a hinge, the plates being laid film side down, the card being placed on one, and then the slide closed again. It is, of course, almost unnecessary to repeat that the slides must be filled in the dark room. After filling the slides it is always advisable to make sure that you have not placed the plates the wrong way round in the slide, that is, with the glass side towards the lens, and to determine this it is just as well to draw up the sliding part, the so-called shutter, about an inch and just look at the plate; it will be found that if the right or film side is towards you it will look somewhat dull, and without the shine of glass.

We now come to the question of plates. For the beginner undoubtedly the slow plate, usually called the "ordinary," is the best; the "rapid" and "extra rapid" may be left till general experience is gained. It would be invidious to single out any particular make, but any one of the leading brands should be obtained and adhered to till a good result is obtained; chopping and changing from one plate to another, and from one developer to another, is ruination to successful work at first. As experience is gained every plate and every developer may be and should be tried in turn.

Having decided on the particular brand of plate and filled your dark slides, you will naturally look out for a subject, and it is almost ten chances to one that you choose a portrait. Well, if you want to mortally weary and offend anyone, by all means ask them to sit to you; by the time you are ready to expose, their temper and patience will be all gone. There is hardly any subject in photography which is so difficult as portraiture, especially portraiture at home, therefore do not attempt portraiture as your first subject.

Set your camera up at an open window at the back of your house, and learn thoroughly the result of every movement on the camera. When you are thoroughly conversant with every movement and the action of the diaphragm, then begin to look about for a subject. We will suppose for the occasion that you can see from your back windows the backs of a row of houses, then focus these as sharply as you can. Do not look at the centre of the screen, but, placing the head about nine

inches from the ground glass—the head and camera being covered with the focussing cloth to keep out the glare of light—choose some point about midway between the centre and the margin of the screen, and, with the full aperture of the lens, focus this, that is, rack the camera in or out till it appears sharp. When this is sharp examine the centre and the extreme margins; probably they will be indistinct. Then insert the stops in the lens, commencing with the largest, till satisfactory definition is obtained. Now cap the lens, turn back the focussing screen and insert the dark slide; cover it with the focussing cloth and withdraw the sliding shutter, and everything is ready for making the exposure.

The problem of correct exposure has not inaptly been dubbed the *pons asinorum* of photography. It is the most difficult thing to correctly estimate. There are numerous instruments in the market for correctly estimating exposure, and one of the most satisfactory is Watkin's exposure meter, sold by R. Field & Co., 142 Suffolk street, Birmingham. The principle of this is the darkening of a specially prepared bromide paper to a standard tint, and then by the use of a series of sliding scales the correct exposure is found.

Exposure is determined by numerous factors, the principal of which are (a) the rapidity of the plate; (b) the actinic power of the light; (c) the aperture of the lens. We have already commented on the aperture of the lens. The rapidity of the plate is estimated unfortunately by various methods, but we will assume that we are going to use a slow landscape plate, such as an Ilford ordinary. The actinic power of the light varies with the latitude of the place, the state of the atmosphere, the time of day, &c. And as some guide we give Scott's law of the variation in actinic power of the light for the different months of the year and times of the day.

We will, however, proceed to practically test the exposure. Suppose we have set up the camera at a window with the lens stopped down to F. 45, using an ordinary plate, this time of the year, midday, with the sun shining. We will draw the sliding shutter of the dark slide just about one-fourth of the way out; we uncap the lens for a quarter of a second and replace it. Now we withdraw the shutter another fourth, and give another quarter of a second, and again cap the lens, and repeat this till the whole plate is exposed; we shall find on exposure that we have a negative with four strips of totally different character, and we shall soon be able to determine which is the correctly exposed strip. This gives us a guide to work from. A correctly-exposed negative should have little or no bare glass in it, even in the deepest shadows, and a gradually increasing deposit throughout all the half tones of the picture to a dense deposit in the sky, the highest light.

To all beginners we strongly recommend that they try to see a correctly exposed and developed negative, and in these days of photographic societies and

papers it will not be difficult to find somebody who can show you such a negative. —*Pharmaceutical Journal.*

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