

Photography Simplified

Continued from May Issue

With Notes on Pinhole Photography.
(By Barclay Hector.)

Exposure.

It is generally supposed that the exposure in pinhole photography is harder to estimate than in ordinary photography. But when it is remembered that a pinhole is equivalent to a very small-stopped lens, it will be easy to calculate the exposure. Supposing the diameter of the pinhole is 1/40in., and it is being used at five inches from the plate (*i.e.*, focal length of 5 inches), the aperture will be equal to 5in. ÷ 1/40in., or F. 200. And the exposure for F. 200 for any specific subject will be that found from any exposure calculator at F. 8, multiplied by about 750; the exposure at F. 200 being about 750 times that required at F. 8. But it has been found that if we assign to specific sized holes specific factors, it will be only necessary to find out the distance from the pinhole to the plate, and multiply this distance by the factor, which will give the F.-No. After finding the exposure (*in seconds*) from a calculator, give an exposure *in minutes* instead of seconds. Now, the factor for the pinhole I recommend is 6. Therefore, by way of example, supposing we are using the pinhole at 8 inches from the plate, we multiply this by 6, the factor, and get F. 48. If we then find from our calculator that the exposure at F. 48 is 3 seconds, then we give 3 minutes.

The following rough guide to pinhole exposure may be found useful for the purpose of first experiments:—

SUBJECT (Middle of Summer, Bright Sunlight, W.P. G Pinhole).	EXPOSURE (IN SECONDS), using Imperial Special Rapid Plates.					
	At 5in	At 8in	At 11in	At 14in	At 17in	At 20in
Open Sea	4	9	16	27	40	57
Distant Landscape Open Beach Ships in Open	8	18	32	54	80	114
Light Foregrounds, no near shadows	16	36	64	108	160	228
Strong Foregrounds Average Street Scenes	32	72	128	216	320	456
Very heavy Fore- grounds Narrow Streets	64	144	256	432	640	912

I also give the following list of the proportionate values of the F.-Nos., taking F. 8 as the standard:—

F. No.	Exposure Proportionate
8	1
11	2
16	4
22	8
32	16
45	32
64	64
90	128
128	256
180	512
256	1024
360	2048

Development.

As there is an appreciable loss of definition in the image formed by a pinhole, and also the masses of light and shade being more or less merged into one another, it follows that we must use some developer which will to some extent accentuate contrasts and minimise the fog-veiling present in all pinhole negatives. I have tried various developers, and have come to the conclusion that there is none better than Pyro-Soda (Imperial Formula), but with half as much again of the Pyro. The addition of extra Pyro tends to slow the action of the developer, but it produces greater density in the high lights, and consequently greater contrast. Do not be alarmed if, when developing your first pinhole, you find it attains an all-over-greyish appearance, known as fog-veiling. This is peculiar to pinhole pictures, and will scarcely affect the resulting print.

Fixing.

To remove some of the fog-veiling, it is a good plan to add to each ounce of Hypo solution (4 in 20) 2 or 3 grs. of potassium ferrieyanide (not ferro), and after fixation is apparently complete examine the negative in daylight. If the fog-veiling is not sufficiently removed (it cannot be completely removed without ruining the negative), replace the negative in the solution for as long as it is necessary.

Suitable Subjects.

LANDSCAPE.—The most suitable landscape subjects for pinhole work are those in which perspective is well marked, *i.e.*, those with strong foregrounds, well-filled middle distances, and hazy distances. Wind is the chief bugbear in landscape work, and it is often necessary to close the aperture during a heavy gust, keeping a note of the time. In any case, the tripod legs should be firmly fixed in the ground, and it is a good plan to hang a heavy weight from below the camera. We need not be so afraid of bright sunlight as we are in lens work. That strong sunlight which in a lens photograph would give an unpleasant stiffness, adds brilliancy to a pinhole photograph. In fact, sunlight greatly adds to the charm of a pinhole picture. It should be easy to imagine a scene where the composition and light and shade alone would form a picture without the introduction of any detail whatever; such is a very suitable pinhole subject.

Another suitable landscape subject is one containing rapidly running water. It is, I think, generally imagined that running water requires a very short exposure; but it is not so. Water ripples constantly and regularly repeat themselves at certain points. Therefore, if we give a long exposure, a general average is secured which will give a most natural appearance, and a far better suggestion of movement.

STILL LIFE, ETC.—For this class of work the pinhole is pre-eminently suitable, giving, as it does, such perfect perspective

and a solidity not easily expressed with a lens. In photographing flowers with a pinhole, just so much haziness of definition is given as to make pictorial that which might be quite commonplace when taken with a lens. Let any of my readers photograph a daffodil with a lens and with a pinhole; on comparing the two results I feel sure he will admit that the one taken with the pinhole will possess far greater pictorial quality, and will give a far truer representation than the one taken with the lens.

COPYING AND ENLARGING.—In copying same size, it is only necessary to place the pinhole half-way between the object to be photographed and the plate. In copying paintings and engravings the brush-marks in the former and the line-markings in the latter will be so diffused as to be almost unnoticeable in the finished print. In enlarging, the distances of pinhole to plate and pinhole to object can be readily ascertained from the tables given in the British Journal Almanac, and the exposure necessary can be calculated from any meter or calculator. The following table may be useful:—

Enlarging, Reducing, and Copying.

ENLARGEMENT	Distance from Pinhole		Relative Exposures	
	to the Subject	to the Plate	Enlargement	Reduction
Same Size ...	1'00	2'00	1'00	1'00
Double (Half)	1'48	3'00	2'25	'56
Three times	1'31	4'00	4'00	'44
Four times...	1'25	5'00	6'25	'39
Five times ...	1'20	6'00	9'00	'36
Six times ...	1'17	7'00	12'25	'34
Seven times	1'14	8'00	16'00	'32
Eight times	1'12	9'00	20'25	'31
Nine times...	1'11	10'00	25'00	'30
Ten times ...	1'10	11'00	30'25	'29

REDUCTION	Distance from Pinhole		Relative Exposures	
	to the Plate	to the Subject	Enlargement	Reduction
Same Size ...	1'00	2'00	1'00	1'00
Double (Half)	1'48	3'00	2'25	'56
Three times	1'31	4'00	4'00	'44
Four times...	1'25	5'00	6'25	'39
Five times ...	1'20	6'00	9'00	'36
Six times ...	1'17	7'00	12'25	'34
Seven times	1'14	8'00	16'00	'32
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BUILDINGS AND STREET SCENES.—As an unlimited angle of view can be had with a pin-hole, it follows that the pinhole is most suitable for photographing street scenes, especially those containing tall or wide buildings. No special instructions are called for, except to remember to keep the back of the camera vertical. Great care should be taken about this.

In taking street scenes (with a long exposure), the people and vehicles passing need not be considered. If the exposure be more than three minutes the street will appear as blank as if no one had passed along it—that is, provided all the people, etc., keep on the move for most of the time.

PORTRAITURE.—Owing to the long exposure necessary, portraiture is not very suitable for the pinhole, but with a steady sitter in a good light, out of doors, some very fair results can be got. Using extra rapid plates, the exposures should not be any longer than were very frequently given in the days of the "wet-plate."

Conclusion.

In concluding these notes, I would suggest that every artistically inclined photographer should provide himself with a pinhole, to be used as occasion demands. I feel sure that sooner or later he will find that it is not a useless part of his kit, but that at some time or another he will find a use for it, and will wonder how he has managed so long to do without it.