

# PHAOSTRON

Pats. Pend.

Trade Mark

MODEL D

Electric Exposure Meter

PHAOSTRON CO.  
Alhambra, California



## HOW TO USE PHAOSTRON EXPOSURE METER

Films vary as to the amount of light needed to correctly expose them. This property is called film speed or emulsion speed. A complete film speed chart is on the reverse side of this sheet. For exposures made under natural light conditions use the numerical designation shown under heading marked "Daylight." For indoor photography or exposures taken under artificial light conditions use numerical designations under column marked "Tungsten." You need only know the numerical film speed designation of the type film you are using to operate Phaostrom Exposure Meter.

## NOTE SIMPLICITY OF OPERATION

No. 1—Set dial A so that correct film speed of the film you have in your camera, appears in window "B".

No. 2—Place Diffusion Shutter in open position. See illustration.

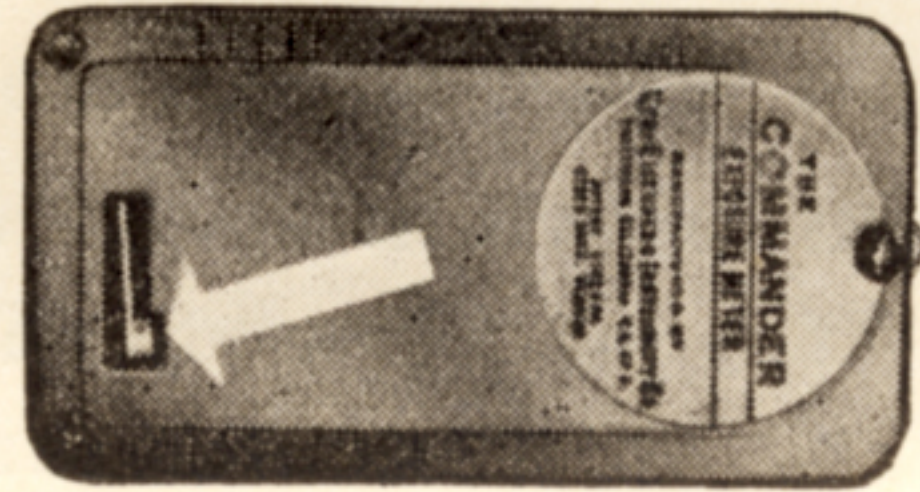
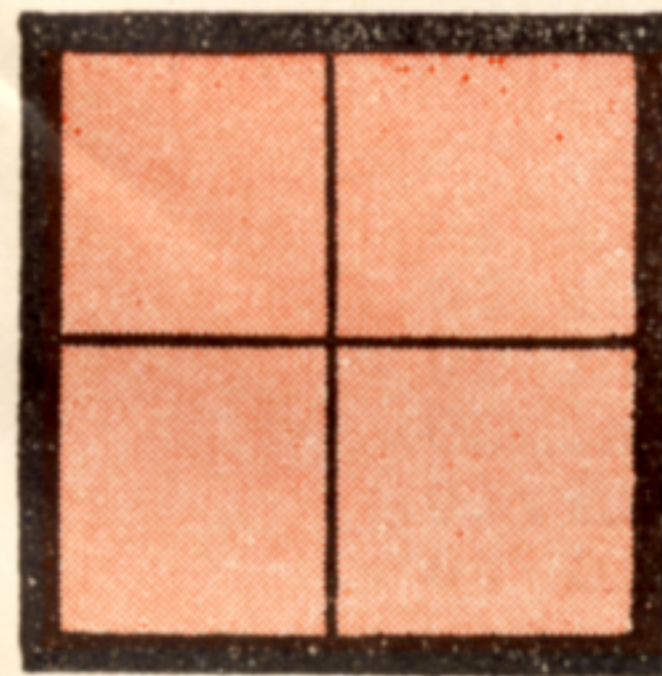
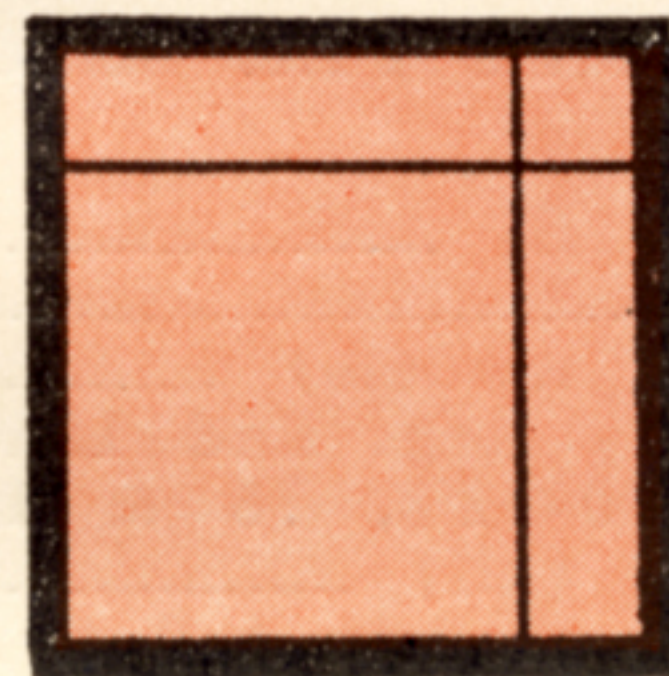


Fig. 3 Open

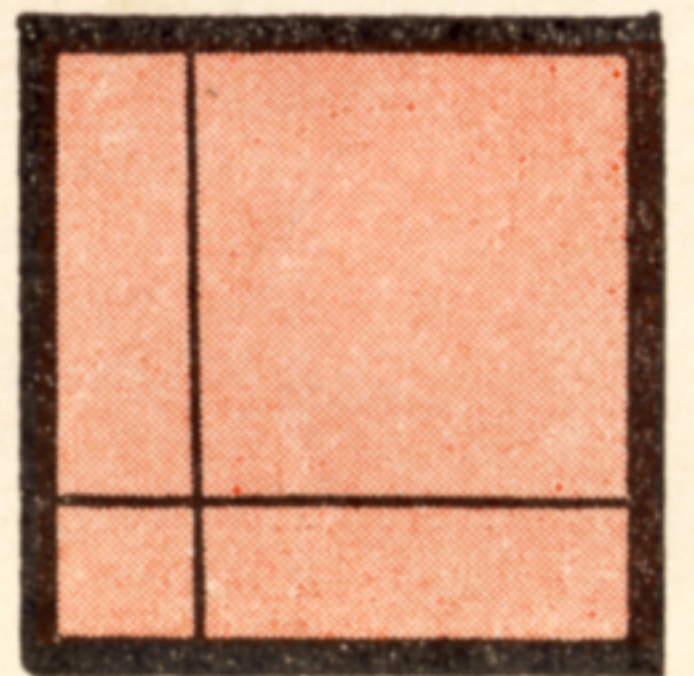
No. 3—Hold Meter in left hand waist level with window I, facing subject look into window H with one eye and adjust position of Meter so that the crossed hair lines form 4 equal squares.



Like This



Not Like This



Not Like This

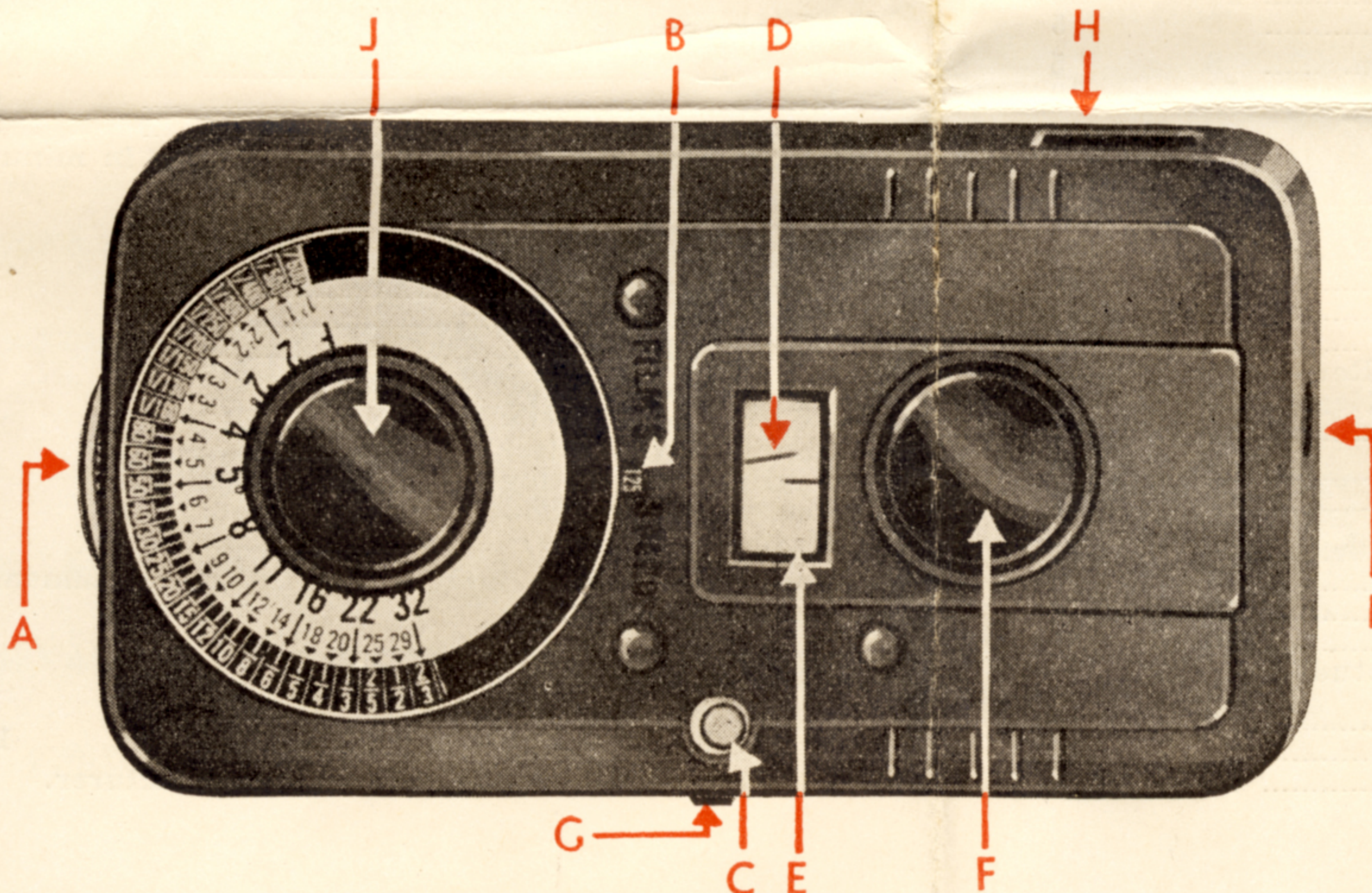
No. 4—With second finger of left hand press red button G and turn knob J with right hand until the red cross in window H matches the intensity of the object under measurement. Release red button G.

The settings for your camera now lie opposite each other on the dials. F stops (aperture openings) on the inner scale and shutter speeds on the outer scale.

## THE EXACT EXPOSURE FOR ANY PART OF A SCENE

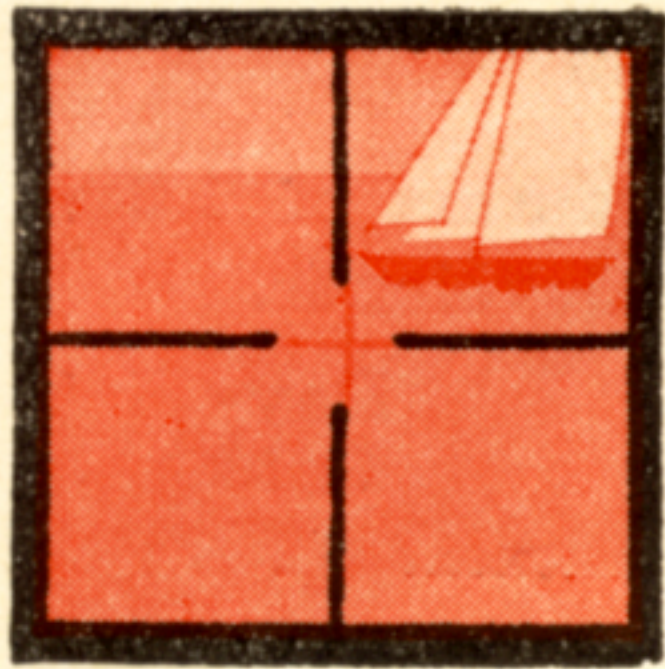


To obtain the exact exposure of the sail, place the red cross on the sail like this and blend the intensity of the cross to match the intensity of the sail.



To obtain the exact exposure of the water repeat placing red cross on water and blend.





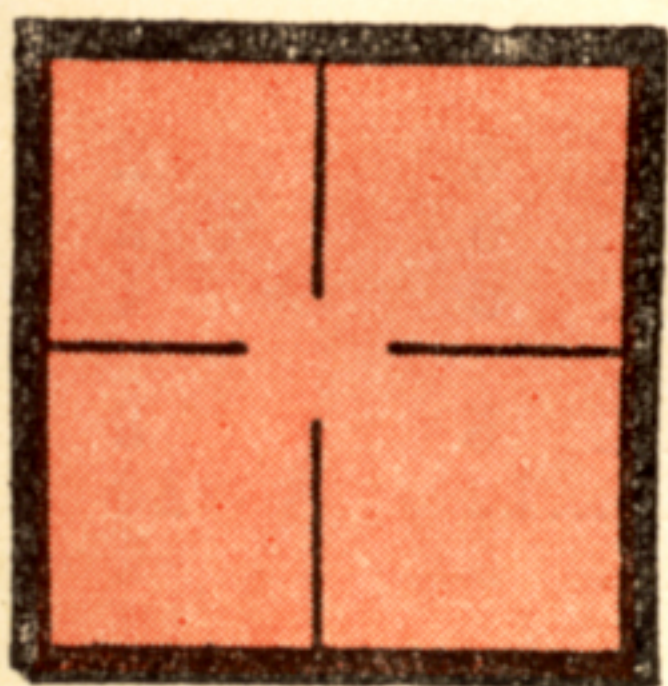
Where the exact exposure for a small resulting object like the boat hull is desired and the red cross would hide this object if placed over it, place the cross adjacent to the object and match the cross to the hull.

Camera settings that will produce the best average exposure for a scene can be obtained by tripping the diffusion shutter to the closed position. (See illustration.)

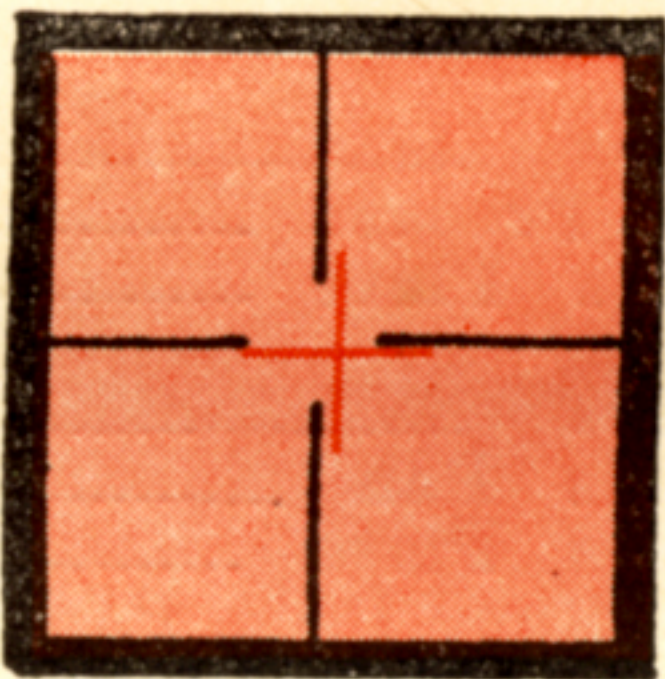


Fig. 4 Closed

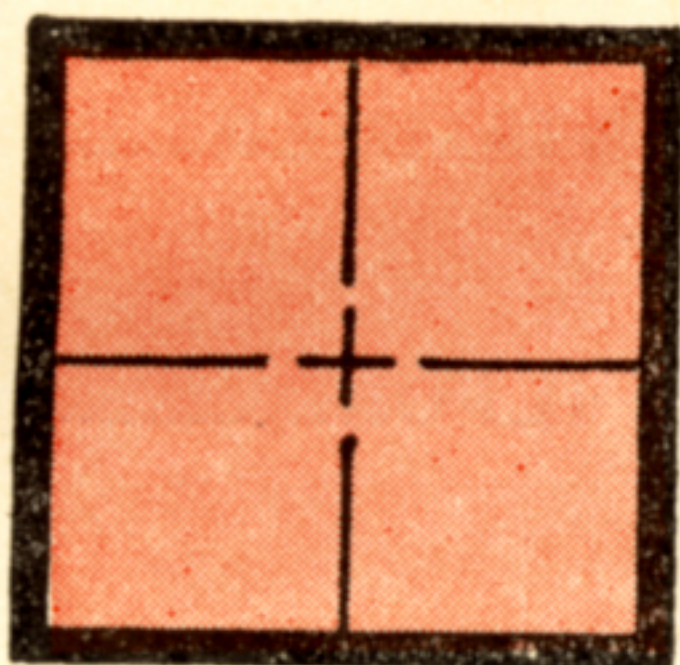
Aim window I at the subject and blend the red cross into the red field.



Like This



Not Like This



Not Like This

No. 5—To calibrate the Meter hold the instrument face up, press button C, this will cause Meter vane D to appear in window E, press and turn knob F until Meter vane D points to index line and release button C.

This operation adjusts the instrument to the batteries. For precision results make this adjustment before you make an exposure measurement.

### SELECTING THE PROPER F STOP

In selecting camera settings for a picture you have a number of F stops and shutter speeds to choose from. F stops on inner dial and shutter speeds on outer dial. You are limited only by the number of shutter speeds on your camera.

For example, let us assume that your camera has only the following shutter speeds: 1/100, 1/50, 1/25, 1/10, 1/5 and 1/2, and that Commander readings show F stop 1.5 (on inner scales) is directly opposite 1/600 (on outer scale.) Then any of the following camera settings could be used because they lie opposite each other on the scale.

F-4 at .....	1/100
F-5.6 at .....	1/50
F-8 at .....	1/25
F-12.7 at .....	1/10
F-18 at .....	1/5
F-29 at .....	1/2

If the scene contains objects in motion, select a shutter speed to stop all action, and use the F stop shown directly opposite.

The larger the F number the smaller the stop (aperture opening). Bear in mind that as the stop (or aperture opening) is reduced the F stop numerically increases. Smaller F stops will bring more objects into sharper focus and help correct errors in judging distance.

### USE OF FILTERS

When photographing with color filter over the camera lens it is usually necessary to increase the exposure. A simple method for allowing for this is to divide the speed of the film by the filter factor and reset the film speed in window B.

For example, if you are using a film with a speed of 16 for daylight and a 2x filter, then 16 divided by 2 equals 8 and reset film speed in window B to 8. If you are using a 4x filter, then 16 divided by 4 equals 4 and reset film speed to 4.

### MAINTENANCE

If knob F will not bring meter vane D to index line in window E when button C is pressed, replace batteries. To replace batteries remove three screws in the back of case, open case and replace with either Eveready 915, Burgess Z or Ray-O-Vac 7R. Be sure that both batteries are installed with brass caps toward the top. Be sure that the window H and aperture I are clean at all times as foreign particles on the glass will result in incorrect measurements. Do not remove back metal plate as this will void guarantee.



Fig. 5



## ROLLS AND PACKS

Based on a developing procedure similar to that of the commercial photo-finisher; that is, 5 minutes in DK. 50 developer.

		Day-light	Tung-sten
AGFA	Plena. Roll	24	16
	Standard Roll	12	4
	Superpan Rolls & Packs	24	16
	Super Plena. Rolls & Packs	50	32
	Finopan	24	16
	Superpan Press	100	64
EASTMAN	Super XX	100	64
	Verichrome	24	16
	Panatomic X	24	16
	N. C.	12	4
	Panchro Press Film Pack	50	32
	Process Packs	4	2
GEVAERT	Superchrome	12	4
	Panchromosa	24	16
PERUTZ	Peromnia	12	8
	Persenso	12	4
	Perpantic	12	8
	Pergrano	6	4

## MINIATURE CAMERA FILMS

Based on the development to a gamma of .8 in the fine grain developer recommended by the film manufacturer.

AGFA	Fine Grain Plenachrome	24	16
	Finopan	24	16
	Fine Grain Rev. Superpan	24	16
	Ultra Speed Pan	100	64
	Supreme Superpan	50	32
DUPONT	Superior	24	16
	F. G. Parpan	12	8
	Micropan	6	4
EASTMAN	Super XX	100	64
	Plus X	50	32
	Super X	24	16
	Panatomic X	24	16
	Panatomic	24	16
GEVAERT	Express Superchrome	12	4
	Panchromosa	12	8
PERUTZ	Peromnia Film	12	8
	Neo Persenso	12	4
	Perpantic	12	8
	Pergrano	6	4

## PRESS

Based on being developed to a gamma of 1.2 in order to give greater contrast.

AGFA	Superpan Press	100	64
	Super Plenachrome Press	100	32
EASTMAN	Super Panchro Pres	100	64
	Super Ortho Press	100	32
	Panchro Press	50	32
	Ortho Press	50	16
	Ortho Press Plate	50	16
DEFENDER	XF Ortho Press	50	16
	XF Pana Press	50	32
GEVAERT	Ultra Panchro Press	24	16
	Super Press Plate	24	16
ILFORD	Ortho Press	24	12
	Double X Press	32	12

## AERO FILM

Based on being developed to a gamma of 1.2 in the film manufacturer's recommended developer.

		Day-light	Tung-sten
AGFA	S. S. Pan	32	---
	Special F. G.	64	---
	Ultra Speed Pan	125	---
EASTMAN	Spec. Topographic Pan	50	---
	S. S. Pan	24	---

## PROCESS

Based on development to a gamma of 3.0 which is found to be standard practice among users.

AGFA	Process	6	2
DEFENDER	Process	6	2
	Process Pan	6	4
CRAMER	Iso Process Plate	10	5
	Contrast Plate	3	1.5
EASTMAN	Process	6	2
	Process Pan	6	4
	Process Plate	3	1
GEVAERT	Process Extra	3	1.5
	Process Artho Plate	20	8
HAMMER	Process	6	2
	Super Process	6	2
	Process Plate	6	4
ILFORD	Process	5	3
	Process Pan	12	10
	Process Plate	5	2
	Spec. Rap. Proc. Pan. Plate	16	12
	Rapid Process Plate	16	10

## COMMERCIAL

Based on development to a gamma of 1.0 in the recommended developer.

AGFA	Triple S Pan	100	64
	Commercial	12	4
	Commercial Ortho	12	8
	Commercial Pan	24	16
CRAMER	Alpha	6	2
	Commercial	8	3
	25	8	3
	Medium Iso	12	6
	Postal	16	6
	Lantern Slide	3	1
	Pictorial Lantern	5	2
	DEFENDER	Commercial	12
DEFENDER	F. G. Pan	24	16
	Pentagon	24	16
	Seed L. Ortho Plate	12	8
	Seed 26 X Plate	12	8
	Seed N. H. L. Ortho Plate	12	8
	Seed 27 Plate	24	8
	Seed 23 Plate	6	2
	Stanley Reg. Plate	12	8
	Stanley Extra Imp. Plate	12	8
	Standard Orthonon Plate	12	8
	EASTMAN	Commercial	12
Commercial Pan		24	16
Commercial Ortho		24	8
Commercial Plate		24	4
33 Plate		24	4
Universal Plate		24	8
Postcard Plate		12	4
W. & W. "M" Plate		12	8
W. & W. Metallographic Pl.		6	4
W. & W. Pan. Plate		12	8
GEVAERT		Commercial	12
	Commercial Ortho	12	8
	Superchrome	24	8
	Sensima Ortho Plate	12	4
	Super Chromosa Plate	6	4
HAMMER	Extra Fast	12	4
	Medium Commercial	12	2
	Medium Commercial Ortho	12	2
	Medium Commercial Plate	12	2
	Medium Commercial Ortho Plate	12	4
	Slow	3	1
	Extra Fast Blue Label Pl.	12	4
	Slow Plate	3	1
	Special Red Label Plate	24	8
	Photo Postal Plate	20	6



## MOTION PICTURE CAMERA

Procedure for these cameras is the same as the foregoing. Since these cameras are generally operated at one given speed "16 frames per second" consult chart below for the shutter speed of your particular camera. Proper F stop to use will lie directly opposite this shutter speed on Inner or F scale.

Shutter speeds of multi-speed cameras are proportional. If your camera shows a shutter speed of 1/30 of a second for 16 frames, then for 64 frames the shutter speed will be four times as fast or 1/120 of a second, etc.

## SHUTTER TIME FOR MOTION PICTURE CAMERAS

### 16 FRAMES PER SECOND

Camera	Time (Sec.)
Agfa Model B	1/30
DeVry	1/30
Eastman (all models)	1/30
Filmo all 70's Reg. and 121	1/30
Filmo Golf 70-71's, 75 & 141	1/40
Filmo 8 mm. (all)	1/30
Keystone late models A-3 & A-7	1/40
Keystone (other models)	1/50
Paillard Bolex	1/30
Paragon	1/30
Simplex	1/40
Stewart Warner 8	1/50
St. W. Hollywood and 532A	1/40
Sept	1/90
Univex	1/30
Victor (all models)	1/30
Zeiss Kinamo S-10-16	1/30
Revere	1/30

NOTE—The difference in shutter time for the same number of frames per second is due to the varying size of shutter opening.

## 35 mm. M. P. FILM

These films are generally developed to a gamma of .7. The films in this group have speeds based on a gamma of .8 in a borax developer.

	Day-light	Tung-sten
AGFA.....Finopan	24	16
Ultra Speed Pan	125	64
Fine Grain Plena	24	12
DUPONT.....Superior Pan	40	24
Orthochromatic	20	8
Micropan	6	4
EASTMAN.....Super X Pan	40	24
S. S. Neg. Pan (1217)	24	16

## 8 mm. M. P. FILM

AGFA.....Filmopan	8	5
High Pan Rev.	24	20
Keystone K. 8	8	5
EASTMAN.....Cine Kodak Reg. Pan.	8	5
Super X Pan.	24	20

## 16 mm. M. P. FILM

AGFA.....Triple S Super Pan Rev.	100	64
Super Pan Rev.	24	16
Hypan Rev.	32	24
Panchromatic Rev.	16	12
F. G. Plenachrome Rev.	12	.....
Superpan Supreme Neg.	64	40
Finopan Neg.	24	16
DUPONT.....Regular Pan	12	8
Superior Pan	32	20
EASTMAN.....Superpan XX Pan Rev.	100	64
Super X Pan	32	24
Cine Kodak Safety	12	8
Measurement*	100	64
*For production study.		
GEVAERT.....Ortho Rev.	16	6
Panchro Super Rev.	24	16
F. G. Panchro Rev.	12	8

## PORTRAIT

Based on being developed to a gamma of .9.

	Day-light	Tung-sten
AGFA.....Portrait	12	8
S. S. Plena	50	16
Superpan Portrait	24	16
Isopan	50	32
S. S. Pan	50	32
DEFENDER.....XF Pan	50	32
XF Ortho	50	16
Portrait H. G. S.	50	16
Portrait	24	8
EASTMAN.....S. S. Pan	50	32
S. S. Ortho Port	50	16
Portrait Pan	22	16
Par Speed Portrait	24	8
Panatomic X	24	16
Polychrome Plate	24	8
W. & W. Tri-Color	50	32
50 Plate	24	16
40 Plate	24	8
D. C. Ortho Plate	24	8
S. C. Ortho Plate	24	8
GEVAERT.....Studio High Speed	24	16
Studio Ultra Panchro	12	8
Ultra Panchro Plate	24	16
HAMMER.....Portrait Ortho	24	4
S. S. Ortho Plate	24	8
Slow Ortho Plate	3	1
ILFORD.....Portrait Pan	32	20
Hypersensitive Pan	50	24
Hyperchromatic	64	32
F. G. Pan	6	4
Soft Grad. Panchro Plate	20	12
Hypersensitive Pan Plate	50	32
CRAMER.....Banner X	16	6
Crown	16	6
Panchrome	24	12
High Speed	32	12

## COLOR PHOTOGRAPHY

Color film and plates have less latitude than black and white emulsions. Tests prove that the average color film will only cover a maximum of 1f stop plus or minus the reading and give good color rendition, therefore when exposing a scene, limit the variation between the minimum to the maximum light to 3f stops, or expose only those scenes where the light variation is within 3f stops.

The following color film speeds are correct for carefully checked equipment. If with your equipment either over or under exposures are obtained the film speed values should be altered. If the pictures are under exposed (too dense) reduce the film speed values. If pictures are overexposed (too thin) increase the film speed values.

These changes in film speed values artificially correct exposure to compensate for equipment errors and should not be interpreted as actual change in film speed ratings.

## AGFA

	Day-light	Tung-sten
Ultra Color Plate	3	.....

## DEFENDER

Dupac	6	12
Tripac	1.5	3

## LUMIERE FILMCOLOR

Daylight	.....	20
Mazda	.....	6
Photoflood	.....	8

For Lumiere material read exposure time in minutes instead of seconds.

## FINLEY PROCESS

Daylight	.....	2
Mazda	.....	1
Photoflood	.....	1

## DUFAYCOLOR

Daylight (no filter)	.....	8
Daylight (with daylight green filter)	.....	6
Photoflood or Photoflash (1A filter)	.....	3
Mazda (1B filter)	.....	2

Above color values include the filters recommended by the manufacturer.

## KODACHROME

8, 16, 35 mm. Regular	8	3*
8, 16, 35 mm. Type A.	8*	12

\*Use filter recommended by the manufacturer.