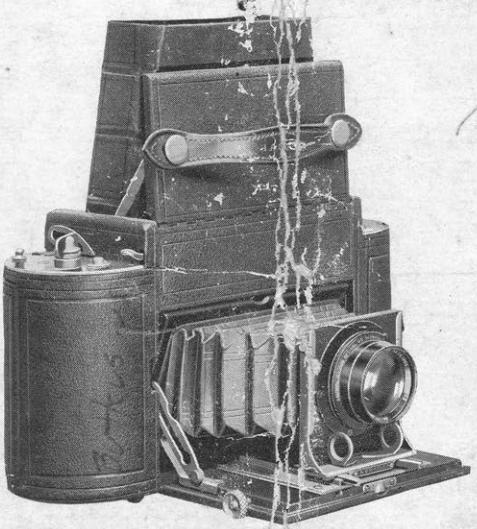
DIRECTIONS FOR OPERATING
THE 1-A GRAFLEX



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Directions for Operating The 1-A Graflex Camera

FOCUSING Adjust the focusing hood by releasing catch **C** on top of camera. Raise the cover which automatically extends the focusing hood. Straighten the two side arms, which will draw the focusing hood taut, and hold it in vertical position. Open front of the camera by pressing the lever **X** on right upper forward corner, draw out lens standard to the "infinity stop" on front bed, and adjust fine focus with rack and pinion.

LOADING THE CAMERA Remove the back of camera by simultaneous pressure upon the top and bottom spring catches. Draw out the lower, left spool center, and turn slightly to the right, which locks it in an extended position, permitting the roll of film to be placed in pocket. A slight turn to the left allows the spring actuated spool center to spring back into place, engaging the film spool. Break the white paper seal on the roll of film, and draw the duplex paper across the exposure aperture and thread into slot in the empty winding spool. A few turns of the winding key will serve to securely bind the paper to the empty winding spool. The camera back is replaced, **Top** side up, and the spring catches pressed securely into locking position. Turn the winding key to the right until **I** appears at the ruby window, which indicates that the portion of film for the first exposure is in position. Immediately after each exposure, the next exposure number should be wound into position at the window. After the last exposure—6 or 12—the winding key should be turned until all of the duplex paper is wound upon the exposed roll of film. Remove the camera back; draw out the winding key, and lock in extended position by turning to the left, out of the slot; lift out the exposed roll of film, and seal with the paper sticker which will be found on the empty spool. The empty spool should then be placed in the pocket at opposite end of camera, and the winding key turned until the web of

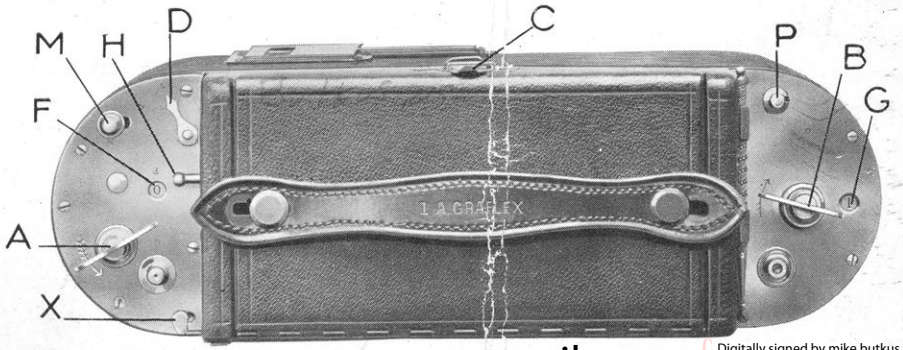
the winding key drops into engagement with the slot in the end of the empty spool. Turn the empty spool until the longest side of the slot is in position to receive the paper from the next roll of film to be exposed.

The Shutter Speed Plate, attached to the Focusing Hood of the Camera, gives approximate shutter speeds, in fractional parts of a second, $\frac{1}{10}$ to $\frac{1}{1000}$, obtainable with the various curtain apertures and tension numbers, 1 to 6.

THE CURTAIN APERTURES The shutter curtain contains five apertures ranging from "full opening" O to $\frac{1}{8}$ of an inch. When the letter **O** appears at **F,** the shutter is wide open. The other apertures $1\frac{1}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{1}{8}$ follow in rotation at **F,** as key **A** is turned to the left.

SETTING THE SHUTTER Set the mirror in focusing position by pressing forward lever **H,** until it catches, at the same time setting the pointer **D** at **I.** Set the curtain by turning key **A** to the left until the required aperture is indicated at **F.** If the curtain is already set so that any one of the aperture numbers $1\frac{1}{2}$, $\frac{3}{4}$, $\frac{3}{8}$ or $\frac{1}{8}$ appears at **F,** release the curtain by pressing button **M** until the proper aperture is registered at **F.**

REGULATING THE SHUTTER SPEED Tension on the curtain is regulated by turning the key **B** to the right, until the required tension number appears at **G.** The numbers run from 1 to 6—the highest number indicating the greatest speed.



To decrease speed of shutter, release tension of spring by pushing escapement **P,** back and forth, until the required lower tension number is registered at **G.**

EXAMPLE For exposure $\frac{1}{160}$ second, use curtain aperture $\frac{3}{8}$ and tension number 3.

CAUTION A safety lock prevents the rewinding of the curtain before the mirror is set, when making instantaneous exposures. This prevents fogging the film, making it necessary to set the mirror, by pressing forward lever **H,** before rewinding the curtain.

INSTANTANEOUS EXPOSURE After the shutter has been set, and the image properly focused, the exposure is made by one inward pressure of the release button located in the front of camera at the left of the drop bed, which simultaneously releases the mirror and curtain.

For slow instantaneous exposures of about $\frac{1}{5}$ second, set curtain at **O** and tension at 1. Pressure upon the release button causes the mirror to rise just before the curtain drops, closing the exposure aperture.

TIME EXPOSURE Press lever **H** forward as far as slot will permit, which sets the mirror, and turn the pointer **D** opposite letter **T.** Wind the curtain until **T** shows at aperture **F.** After focusing, release the mirror, which travels up out of the cone of light, and commence the time exposure by releasing the curtain to **O** (open) with one pressure of button **M,** and terminate the exposure with a second pressure of button **M.**

CLOSING THE CAMERA When closing the camera, push the lever **H** forward as far as it will go before pushing the front lens standard back into the instrument. Press down on the two front side arms, and swing the bed upward into locking position.

GRAFLEX EXPOSURE TABLE FOR VIEWS

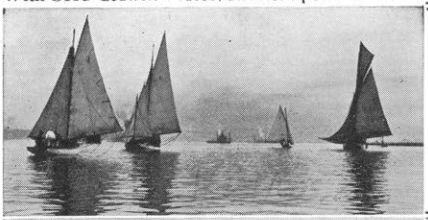
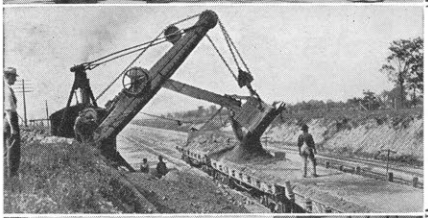
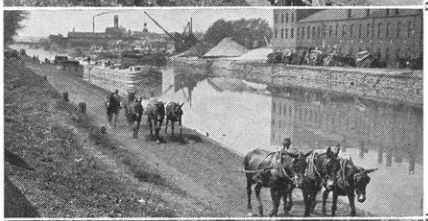
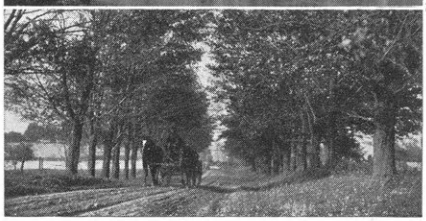
Approximately Correct Exposures with Stop F.8

Exposures with stops LARGER or SMALLER than F.8 should be respectively DECREASED or INCREASED ONE-HALF with each succeeding larger or smaller stop used.

Example=Third group—May—Bright—9 A.M. to 3 P.M.=160—F8.

Stop numbers F=	4.5	5.6	6.3	8	11	16	22	32
Relative exposure	550	350	235	160	80	40	20	10

Table shows exposures with Graflex Film, Eastman Film, Seed 30 Plates. With Seed Graflex Plates, shutter speed can be increased one-third.

		May June July Aug. 9 AM to 3 PM	May June July Aug. 7 AM and 5 PM	Mar. Apr. Sept. Oct. 10 AM to 2 PM	Mar. Apr. Sept. Oct. 8 AM and 4 PM	Jan. Feb. Nov. Dec. 11 AM to 1 PM	Jan. Feb. Nov. Dec. 9 AM and 3 PM
	Distant { Landscapes, Mountains, Vessels }	Bright Sun	350	160	295	135	235	110
	Very Open { Beach Views, Snow Scenes, River Views }	Hazy	195	90	160	75	135	60
	Aviators in Flight Open Views from Train	Cloudy Dull	80	50	65	40	50	35
	Open { Landscapes, Roads & Fields, Snow Scenes }	Bright Sun	195	110	160	90	135	75
	Nearby { Beach Views, Vessels and Boats }	Hazy	110	60	90	50	65	40
	Light Buildings Athletic Events from Grandstand	Cloudy Dull	65	35	50	30	35	25
	Open Park Views Snow Scenes with Objects Nearby	Bright Sun	160	80	135	60	110	50
	Large Figures or Groups in the Open	Hazy	90	50	75	40	65	35
	Vessels at Wharf Medium Buildings Light Streets	Cloudy Dull	50	25	40	20	30	15
	Shady Park Views Figures in Shade of Building or in Direct Light with Dark or Foliage Background	Bright Sun	110	60	90	50	80	40
	Dark Buildings	Hazy	65	35	50	30	40	25
	Light City Street Shady Porch Groups	Cloudy Dull	35	20	30	15	20	10
	Open Woods Shady Driveway, Views with Overhanging Trees	Bright Sun	50	30	40	25	35	20
	Figures under Piazza or Pergola	Hazy	30	20	25	15	20	10
	Dark City Street	Cloudy Dull	20	10	15	1/8	10	1/2

DEPTH OF FOCUS

Depth of Focus or Field expresses the ability of a lens to give a sharply defined image of both near and distant objects. It is impossible to secure speed and great depth of focus at the same time, except with lenses of a very short focal length.

The degree of depth depends upon the relation between the focal length of lens and stop used.

The depth of focus increases as the focal length of lens and diameter of stop decreases. Focus a lens of known focal length upon a point at the hyperfocal distance of the stop used and objects beyond one-half that distance from camera will be in focus.

Example=6½ in. Lens—Stop F.16—Point of Focus, 44 ft.=Area in Focus, 22 ft. from camera to infinity.

HYPERFOCAL DISTANCES

FOCAL LENGTH OF LENS	STOP F 4.5	5.6	8	11	16	22	32
4½″	75′	60′	42′	31′	21′	15′	13′
5½″	112′	90′	63′	46′	32′	23′	16′
6½″	156′	126′	88′	64′	44′	32′	22′
7½″	208′	167′	117′	85′	59′	43′	29′
8½″	268′	215′	151′	108′	75′	55′	38′

When it is required that subject be sharply defined throughout its area, focus upon a point at the hyperfocal distance, in large figures on table, for lens and stop designated, and objects from about one-half that distance—22 feet—from camera to infinity will be in focus. With next smaller stop nearest object in focus will be about 16 feet.

The nearer the point focused upon the greater the loss in depth of focus, unless the lens stop is decreased in diameter sufficiently to give the required sharpness to objects in foreground and background.

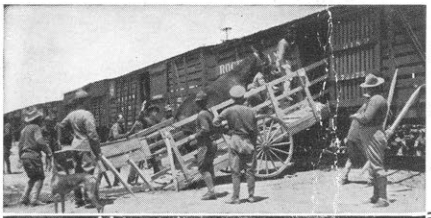
Table showing the nearest and farthest objects in focus when focusing lenses of different focal lengths, with stop F.8, upon a point at different distances from camera.

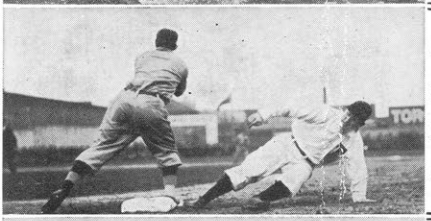
DISTANCE OF OBJECT FOCUSED UPON

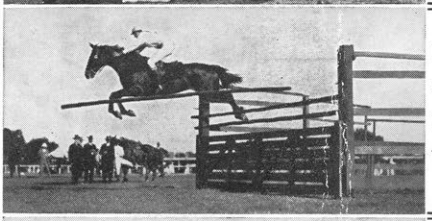
FOCAL LENGTH OF LENS	STOP F.8	6 FT.	12 FT.	25 FT.	50 FT.
4½″	63″—84″	9½′—17′	16′—62′	23′—Infinity
5½″	65″—79″	10′—15′	18′—41′	28′—Infinity
6½″	68″—77″	10½′—13½′	19½′—35′	32′—116′
7½″	68½″—76″	11′—13′	20½′—32′	35′—88′
8½″	69″—75″	11½′—12½′	21′—30′	37½—75′

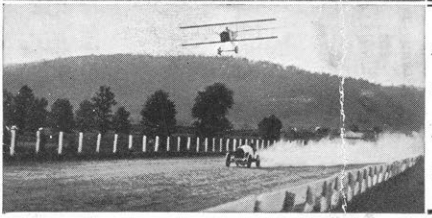
GRAFLEX EXPOSURES FOR STOPPING MOTION AT RIGHT ANGLES TO CAMERA

One-third less will stop motion at 45 degrees.
Two-thirds less will stop motion directly toward or from camera.









SPEED OF OBJECT PER HOUR

DISTANCE OF OBJECT FROM CAMERA	FOCAL LENGTH OF LENS	4½"	5½"	6½"	7½"	8½"
FEET						
25	Pedestrians, Cattle, Average Views — 5 MILES	110	135	160	235	350
50		90	110	135	160	195
100		90	110	135	160	195
25	Street Traffic, Boating, Children Playing — 10 MILES	235	295	350	440	550
50		110	135	160	235	295
100		90	110	135	160	195
25	Athletics, Boat Races, Baseball, Autos in Street — 20 MILES	440	550	680	825	1000
50		235	295	350	440	550
100		110	135	195	235	295
25	Horse Racing, Motor Boats, Diving, Views from Trains — 30 MILES	680	825	1000	45° 825	
50		350	440	550	680	825
100		160	235	295	350	440
					TOWARD CAMERA	
25	Auto Races, Motorcycles, Aeroplanes, Fast Trains — 60 MILES	45° 1000	550	680	825	1000
50		680	825	1000	45° 825	
100		350	440	550	680	825

SUGGESTIONS

Find the subject group, and the exposure for movement at right angles to camera will be found in the square on the line of "distance of object" and under "focal length of lens."

Example:

Subject	Motor Boat
Distance	50 Feet
Speed of Subject	30 Miles per hour
Focal Length of Lens	$6\frac{1}{2}$"
Exposure	$\frac{1}{350}$th of a second

The shutter speeds given are necessary to stop the motion. The lens opening must be regulated to meet the prevailing light conditions.

For bright days it is suggested that Stop F.8 be used with exposures $\frac{1}{1000}$ to $\frac{1}{350}$; F.5.6 with exposures $\frac{1}{350}$ to $\frac{1}{550}$; F.4.5 for exposures $\frac{1}{680}$ to $\frac{1}{1000}$.

On hazy or dull days, with same exposure, proportionately larger lens openings should be used.

It is not advisable to operate the shutter at a higher speed than is necessary to stop movement of the subject, thereby gaining the advantage of full exposures and the ability to use smaller lens openings, which will give greater depth of focus.

To decrease a given shutter speed ⅓ for movement at 45 degrees, or ⅔ for oncoming subjects, use the second lower speed on Graflex exposure plate for ⅓ less, and the fifth lower exposure for ⅔ less.

Example:

	1000
	825
	680
Right angles ⇒	550
	440
45 degrees, ⅓ less ⇒	350
	295
	235
Toward camera; ⅔ less ⇒	195
	160

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