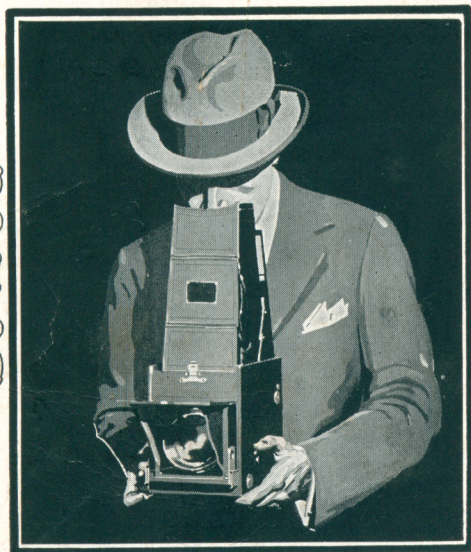


# GRAFLEX

*and*

# GRAPHIC

FOCAL PLANE SHUTTER  
PHOTOGRAPHY





# Graflex and Graphic Focal Plane Shutter Photography

THE following pages of this booklet will explain the best methods of using the Graflex under varying conditions of light with different subjects, and also show by illustration how in some cases improvement could have been made.

A Graflex fitted with a high speed anastigmat lens will do everything that any other camera will do, with the one exception of wide angle work, and it will, in addition, do work that other cameras can not do. There are, however, certain laws of optics which even the Graflex can not alter, and it is because of this fact that photographers sometimes expect the impossible of their lens and camera.

What many Graflex users would like, is an  $f.2.5$ ,  $f.3.5$  or  $f.4.5$  long focus lens which will, on the same negative, give sharp images of both nearby and far distant objects when it is used with its largest stop. In other words, they want a lens which combines great speed and great focal length with great depth of field. Such a lens never has been, and, owing to an unalterable law of optics, never can be constructed.

A lens may have two of these qualities but it can not have all three of them.

If it has great speed and great focal length it can not have great depth of field.

If it has great speed and great depth of field it can not have great focal length.

Depth of field\* is the distance between the nearest and farthest objects the lens can sharply focus at the same time.

Depth of field depends on the focal length of the lens, on the size of the stop used, and on the distance from lens to subject.

The shorter the focal length of the lens, the greater the depth of field.

The smaller the stop used, the greater the depth of field.

The farther the subject is from the lens, the greater the depth of field.

The series of target pictures on pages 16 to 21 graphically illustrate how the unalterable law we have mentioned affects

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\* Depth of field is often referred to as depth of focus.



the sharpness of the pictures. The notes under the pictures explain how the operator can secure the desired depth of field with any long focus high speed lens. The pictures are particularly helpful to Graflex users, as they show the effect produced with lenses of various focal lengths and with different diaphragm openings.

The target pictures show that it is not possible to secure great speed and depth of field at the same time with a long focus lens. By using a fast lens at full aperture, faster shutter speed may be used, but the image on the negative will not be perfectly sharp over its entire area; the object on which the lens is focused will be sharp, but objects that are closer to and farther from the camera than the subject focused upon, will be blurred because they are out of focus. If it is desired that everything recorded by the lens be absolutely sharp and distinct, the lens must be stopped down; the amount of stopping down that is necessary can be seen by watching the ground glass. Naturally, the smaller lens openings will not admit as great a volume of light as the larger ones, and more exposure must be given than when the lens is used at its larger openings. When making exposures a choice must be made between a negative that shows good definition of objects at different distances, by using one of the smaller diaphragm openings, or, a negative made with very short exposure at full lens aperture with the principal subject only in perfect focus. Certain subjects, such as horse and automobile races and athletic events, permit no choice, as the speed at which the objects move makes it necessary to admit all the light possible, so that the shutter may operate fast enough to arrest movement in the image that the lens projects to the sensitive surface.

It is difficult to state definitely the exposure that should be given in each case, as many factors combine to determine how long the film or plate should be exposed to record the image perfectly, but the beginner can not go far wrong in average work, when the sun is shining brightly, if the lens diaphragm is set at  $f.8$ , the curtain aperture at  $\frac{3}{4}$  and the tension at No. 4 or 5.

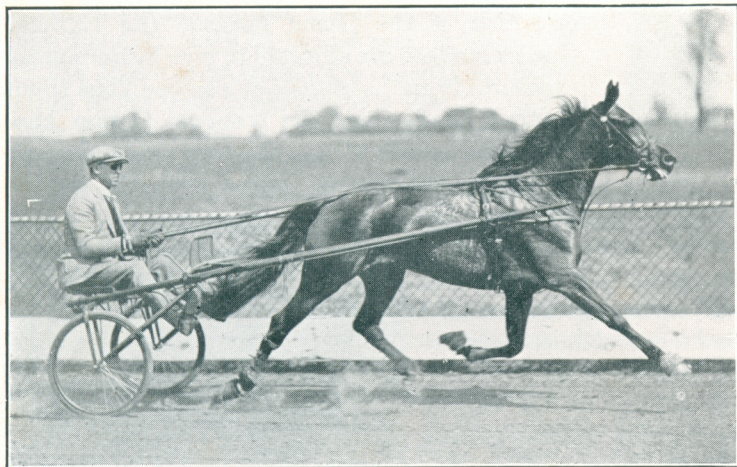
The illustrations on pages 3 and 8, and from 16 to 21 show a variety of subjects photographed under different conditions. By using the same tension, curtain aperture, and lens opening on similar subjects, the Graflex user will get correctly timed negatives.





### Outdoor Sports

**S**UBJECTS of this description are most successfully secured with the Graflex. Focusing the image and watching the action on the ground glass screen, until the most desirable effect is shown and then obtaining in the negative just what was seen, by means of the extremely short exposure possible, are features which make the Graflex indispensable. The upper picture was made with a Graflex, exposure  $\frac{1}{350}$  second at  $f.4.5$ . The lower photograph was made with a Graflex, with  $7\frac{1}{2}''$   $f.3.5$  lens at  $f.3.5$  diaphragm opening, exposure  $\frac{1}{680}$  second. This speed was required as the horse was traveling directly across the range of vision. Had the operator stood so that the horse moved away from or towards the camera,  $\frac{2}{3}$  less shutter speed could have been used or, at an angle of 45 degrees,  $\frac{1}{3}$  less.





# The Graflex Focal Plane Shutter

**T**HE Graflex Focal Plane Shutter consists of a long curtain with a number of fixed apertures varying from full size of the negative to an eighth of an inch in width. These openings being fixed, insure at all times an absolutely uniform rectangular aperture. These same advantages are retained in the National Graflex focal plane shutter through the use of two curtains which are firmly locked in their relationship to one another for each aperture used. The curtain operates as closely as possible to the surface of the film or plate. The duration of the exposure is regulated by the size of the curtain aperture employed, and the rapidity with which it moves across the focal plane. The great advantage a focal plane shutter has over those of the usual type will be instantly appreciated when it is considered that the focal plane shutter permits the lens to work at its full efficiency during the whole period of exposure.



Graflex  
Shutter  
Curtain

## Shutter Speeds

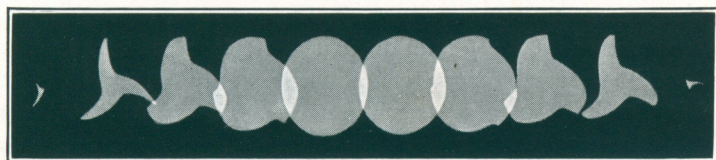
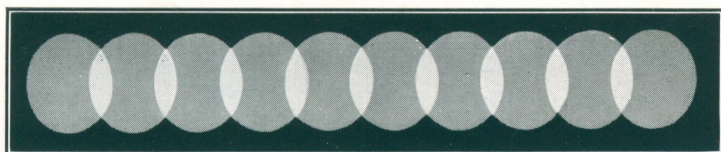
The shutters in Graflex Cameras, with the exception of the Home Portrait and National Graflex models, are adjusted to give instantaneous exposures from  $\frac{1}{10}$  to  $\frac{1}{1000}$  of a second. The Home Portrait Graflex and the National Graflex have maximum speeds of  $\frac{1}{500}$ . A speed table plate attached to the camera shows instantly the exposures obtained with the different tensions and with the various curtain apertures. The first vertical line of figures on the speed table indicates the tension on the curtain spring, the shutter curtain moving with the greatest rapidity when the spring is

R. B. GRAFLEX-SERIES D CURTAIN APERTURE				
TENSION NUMBER	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{2}$
1	350	110	40	10
2	440	135	50	15
3	550	160	65	20
4	680	195	75	25
5	825	235	80	30
6	1000	295	90	35

THE FOLMER GRAFLEX CORPORATION  
ROCHESTER, N. Y., U. S. A.

Speed Table Plate





wound to the highest tension, No. 6. The first horizontal line of figures ( $\frac{1}{8}$  inch, etc.) shows the widths of the curtain apertures. The narrower the opening moving across the focal plane, and the higher the tension number employed, the shorter becomes the exposure. The numbers 10 to 1000 indicate fractions of a second in shutter speeds, 1000 showing that when the tension spring is wound to 6 and the curtain aperture one-eighth of an inch, the exposure will be  $\frac{1}{1000}$  of a second. To give an exposure of  $\frac{1}{195}$  of a second the tension should be wound to 4 and the curtain aperture set at  $\frac{3}{8}$  inch, as indicated on the speed table. The shutter is arranged so that time exposures of any duration may be made. By setting the curtain at 0 (open) and allowing the rising mirror to commence and the dropping curtain to terminate the exposure, an automatic exposure of approximately one-fifth second may be made.

The above illustrations are reproduced from actual photographs of the light projected by a lens through a Graflex Focal Plane Shutter, and a between-lens shutter. Both exposures were made at  $f.4.5$  aperture.

The upper illustration shows that with the Graflex Focal Plane Shutter there is no diminishing of the volume of light, due to the opening and closing of the shutter.

With the Graflex Focal Plane Shutter the lens works at its full efficiency during the entire period of exposure. The lower illustration shows that a between-lens shutter, when making short exposures, uses most of the exposure period in opening and closing, allowing the lens to work at its full efficiency during but a small fraction of the exposure time. It is therefore evident that the Graflex Focal Plane Shutter allows more light to reach the film or plate during a given interval of exposure than any other type of shutter.



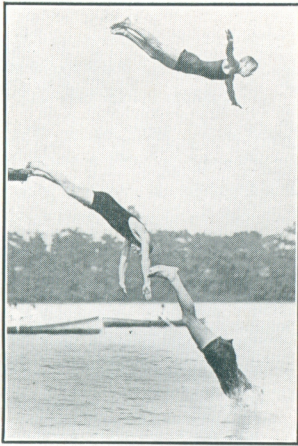
## Correct Use of Stop Openings and Shutter Speeds Under Various Conditions

IT is most important to determine the exposure required by the subject to be photographed. Do not use a  $\frac{1}{1000}$  or even a  $\frac{1}{500}$  second exposure for an ordinary street scene, for which a  $\frac{1}{160}$  or  $\frac{1}{135}$  second exposure is ample. On the other hand, do not try to photograph a speeding automobile or a trotting horse in  $\frac{1}{75}$  of a second. A very few shutter speeds will serve for most work. For ordinary street scenes,  $\frac{1}{160}$  or  $\frac{1}{135}$  of a second, or even  $\frac{1}{110}$  of a second will most frequently be used. If the action is rapid, such as an automobile traveling at a speed of, say 20 miles an hour,  $\frac{1}{235}$  or  $\frac{1}{295}$  of a second exposure with stop *f.4.5* should be given if object is at least 100 ft. distant. If closer, at say 50 ft., the exposure time would be decreased to  $\frac{1}{440}$  or  $\frac{1}{550}$ , or at 25 ft. it would have to be still faster or about  $\frac{1}{825}$  or  $\frac{1}{1000}$ . These speeds are for  $7\frac{1}{2}$  inch lens. A longer focal length of lens would require faster speeds but with shorter lengths, exposure time could be lengthened. For speeding automobiles, horse races, athletic events, motor boats and aeroplanes, the higher speeds such as the  $\frac{1}{680}$ ,  $\frac{1}{825}$ , and in some instances the  $\frac{1}{1000}$  of a second will be required for successful results. For these shutter speeds stop *f.2.9*, *f.3.5*, *f.4.5* or *f.5.6* should be used. For portraiture, groups, and close range work, when the subject is in the shade and for nearby subjects under the open sky on cloudy days, the  $\frac{1}{75}$  of a second shutter speed will be useful, with an *f.4.5* lens used at full aperture.

Some Graflex users find it inadvisable to hold the camera in the hands for speeds slower than  $\frac{1}{40}$  of a second, while others experience no difficulty in making exposures as slow as  $\frac{1}{20}$  of a second. This can best be determined by the individual, although in outdoor work when the wind may be blowing, anything below  $\frac{1}{40}$  of a second is not safe. For the slower exposures the Graflex should be placed on a Crown tripod or some other firm support.

The amount of light that reaches the film or plate during the period of exposure depends both on the shutter speed and the size of stop used. Lenses working at *f.2.9*, *f.3.5* or *f.4.5* offer many advantages and are, in fact, the only lenses which will





Bright sunlight, exposure  $\frac{1}{200}$  second,  
stop  $f.6.3$

permit the use of a Graflex to its full capacity. The fact that it is an extremely rapid lens does not mean that it should always be used as such. One of its great advantages is that when used with its largest stop it is a fast lens, and when used with smaller stops it does the work for which slower lenses are designed. For average pictures and moderate speed work under favorable conditions of light, stop  $f.5.6$  or stop  $f.8$  should generally be used. Occasionally  $f.11$  or  $f.16$  may be used when the subject is in very

bright sunlight and when depth of field is important.

Smaller stops than  $f.16$  are not usually recommended for instantaneous work. For photographing at close range, for work on rainy or heavily clouded days, early or late in the day, or when subjects are in the shade, full aperture or  $f.5.6$  should be used. For practically all portraiture and for all instantaneous exposures indoors or when working under very adverse conditions of light,  $f.2.9$ ,  $f.3.5$  or  $f.4.5$  is desirable. When an  $f.6.3$  lens is used with its largest stop the exposure must be about twice as long as with the largest stop on an  $f.4.5$  lens, and nearly five times as long as with the largest stop on an  $f.2.9$  lens.

It is a wise practice to always use the slowest shutter speed that it is practical to employ for the subject to be photographed, for the reason that the slower the shutter speed the smaller the stop that can be used, and the smaller the stop the greater the depth of field. The exposure should always be ample to insure a fully timed negative.

The actual diameter of the stop opening does not determine the speed of a lens. Speed depends entirely upon *relative aperture*—that is; the relation that exists between the effective aperture and the focal length of the lens. Take for example, two lenses each with an effective aperture one inch in diameter, the first 8 inch focus, the second 4 inch focus. This first lens works at  $f.8$  (the factor, or relation of 1 to 8); the second lens  $f.4$ . The





Negative made with a Graflex, bright sun,  $\frac{1}{400}$  second,  $f.8$

aperture of both lenses are the same in diameter, yet the 4 inch lens is exactly four times as fast as the 8 inch lens. However, stop the second lens down to  $f.8$ , or in other words, close the diaphragm until it has an effective aperture of one-half inch diameter, and both lenses will have the same speed.

It holds true with all lenses that the shorter the focal length in relation to the stop used the greater the depth of field. If a lens does not give sufficiently sharp images of objects at different distances, it can be made to do so by stopping down, or by getting farther away from the subject.

The target pictures plainly illustrate what is meant, particularly series No. 1, No. 2 and No. 4. Take for illustration a few examples of practical, everyday work. In the first instance we are working in a confined position, that is, we can not get more than 15 or 18 feet away from the subject, which we will presume to be a group of three or four people. There is little movement in the subject, so we decide that an exposure of  $\frac{1}{100}$  second will be sufficient to obviate any possibility of a blur from movement. We have an  $f.4.5$  lens, but as conditions are favorable, say about 1 or 2 o'clock in the afternoon in bright sun, we can easily stop down to  $f.8$  or  $f.11$ , and with an exposure



of  $\frac{1}{160}$  of a second the result will be a success. If we wish to stop down still farther in order to obtain better depth of field, we can stop down to  $f.11$  and use a shutter speed of  $\frac{1}{80}$  and obtain about the same result.

As a second illustration, we will presume that for some reason we find it necessary to again photograph the same or a similar group in order to perhaps secure additional pictures of one or two people of note or prominence, but this time it is much later in the day, say 4 P. M., and in addition the sky has become clouded. Yet it is desirable to use an exposure of  $\frac{1}{160}$  second. At  $f.8$  our negative would be so undertimed that the result would be a failure. It is here that the reserve speed of the lens is called for, so we open the diaphragm to  $f.4.5$ , and with the shutter exposure of  $\frac{1}{160}$  second, our negative renders a very excellent print. In this case we would have to arrange our picture so that the entire group is in focus, but we could not expect sharpness of detail in foreground or background and will have to be satisfied with our efforts in getting the principal figures in focus.

A further example: Suppose we have a group of four or five people to photograph and desire to have each one sharp in the negative. The group is perhaps a family gathering and the last person to arrive does not appear until 5 P. M. It being so late in the day, we know that it will tax even the capacity of our fast lens to secure a good instantaneous exposure and to be sure of success an exposure of  $\frac{1}{80}$  of a second at  $f.4.5$  is the slowest which we dare use. We would, of course, like to have the group as large on the print as possible, but if we get too close we either have to stop down the lens, causing great under-exposure, or perhaps get only two or three of the group in good focus if we use the lens at its full opening. Neither is desirable and our only alternative is to get farther away, and have the entire group much smaller on the film. Instead of being but 12 or 15 feet away, it is necessary to get back to a distance of perhaps 20 or 25 feet from our group. Now, although each individual figure will necessarily be smaller the entire group will be sharp and in focus.

Bromide enlargements sixteen by twenty inches or larger have been made very successfully from a small area of a **Graflex** negative. In fact, on account of the clean, sharp detail obtained in the negative at the point or principal portion of interest, **Graflex** negatives lend themselves better to enlarging than perhaps any other.



## Shutter Speeds

**F**OR very slow instantaneous or for time exposures use a Crown tripod or some firm support.

For photographing in the deep shade, portraiture at close range, and for indoor portraits in exceptionally good light, or wherever the action in subject is exceedingly slight or there is practically no movement,  $\frac{1}{40}$  or  $\frac{1}{25}$  of a second shutter speed (No. 1 tension at  $\frac{3}{4}$  inch aperture or No. 4 tension at  $1\frac{1}{2}$  inch aperture) is recommended.

For ordinary street scenes, general out-of-door hand work, or where action is not excessive, use  $\frac{1}{160}$ ,  $\frac{1}{135}$  or  $\frac{1}{110}$  of a second exposure. (No. 3, 2 or 1 tension,  $\frac{3}{8}$  inch aperture.) These three shutter speeds will probably be used more frequently and prove more serviceable than any other, for average work.

For people moving briskly, street scenes with automobiles, or when making exposures from a moving object, such as the deck of a boat; photographing children at play, in fact, all work where the action is brisk, use  $\frac{1}{295}$  or  $\frac{1}{350}$  of a second. (No. 6 tension,  $\frac{3}{8}$  inch aperture or No. 1 tension,  $\frac{1}{8}$  inch aperture.)

For extreme speed work, horses racing, speeding automobiles, motor boats, athletic sports, diving, jumping, birds flying and aeroplanes, use  $\frac{1}{680}$ ,  $\frac{1}{825}$  or  $\frac{1}{1000}$  of a second (Nos. 4, 5 or 6 tensions,  $\frac{1}{8}$  inch aperture.)

Compute the shutter speed to be used consistent with the action of the subject to be photographed.

For general work, where the light is good, say between 10 and 2 o'clock in winter, and between 9 and 4 in summer, use stop *f.5.6* or *f.8*. Where the light is exceedingly good, very bright sun, and where the shutter speed is not faster than  $\frac{1}{350}$ , stop *f.11* may be used. Seldom, if ever, are lighting conditions suitable to use smaller than stop *f.16* with the higher shutter speeds.

For indoor portraiture use *f.2.9*, *f.3.5* or *f.4.5*. For portraiture in deep shade, work in the woods, when raining, when the sky is heavily clouded, when the light is dull and weak, very early



or late in the day (before 9 A. M. or after 4 P. M. in summer) or in fact, for all work under adverse lighting conditions use stop *f.2.9*, *f.3.5*, *f.4.5* or perhaps at times *f.5.6*. For all work where limited depth of field is desired, or where no detail in the background is wanted, use *f.2.9*, *f.3.5* or *f.4.5*.

A few suggestions in regard to photographing children, particularly indoors, will be of value. The *f.2.9*, *f.3.5* or *f.4.5* lens is undoubtedly the best for this work. First it is well to determine the slowest shutter speed that will arrest movement. Where conditions are unusually good, such as in a sun parlor where direct sunlight enters, or in rooms with walls and hangings light in color and with several windows,  $\frac{1}{50}$  of a second can be used successfully. With very young children and babies, negative quality can not always be considered, as the exposure must be quick enough to avoid blurring from unlooked-for movement of the subject. White or light colored clothing very materially assists in shortening the exposure. A sheet or something similar placed on the floor reflects light into the faces and a large towel or white cloth over the back of a chair aids in lighting up the shadow side of the face, especially in close-up portraits. When taking pictures of children playing on the floor, do not point the camera down at them, but hold it so the lens will be about on a level with the children's eyes. In using the slower exposures the camera should be placed on a Crown tripod or some firm support. For natural and unstrained effects let the children pose themselves. The simpler a child is dressed the more natural and unaffected will be the result.

In outdoor work extremely rapid action will require exposures of  $\frac{1}{825}$  to  $\frac{1}{1000}$  of a second. There are, of course, exceptions and variations to all rules that may be laid down for the use of any camera, and the individual worker will soon adopt those methods which produce the best results. We believe, however, that the fundamental principles have been sufficiently outlined to quickly help the Graflex user to obtain highly satisfactory results.

The Graflex Exposure Chart shown on the next page is extremely simple, but will be found of value in photographing the great majority of subjects.



## Graflex Exposure Chart

	SUBJECT	SPEED	STREET	POR- TRAIT	LAND- SCAPE
TENSION	SHUTTER OPENING	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{4}$	$1\frac{1}{2}$
	LENS APERTURE	<i>f.4.5</i>	<i>f.6.3</i>	<i>f.8</i>	<i>f.16</i>
	SPEED OF SUBJECT	60 mi.	15 mi.	Still	Still
	<hr/>				
1.	Very Dull	350	110	40	10
2.	Dull	440	135	50	15
3.	Clear	550	160	65	20
4.	Bright	680	195	75	25
5.	Very Bright	825	235	80	30
6.	Brilliant	1000	295	90	35

**G**RAFLEX and GRAPHIC Cameras are ideally suited for photography at night. Photoflood, photoflash, or regular incandescent service lamps will serve. The table below may prove helpful as a guide to exposures when no special lighting is to be used.

Exposure Table Using Regular Service Lamps Without Reflectors  
(350-Watt Total) for Kodak Super Sensitive Panchromatic Film

*When using Kodak Panatomic Film or Kodak Verichrome Film, increase the exposures two or three times.*

Distance Lamps to Subject	Diaphragm or Stop Opening	Exposure in Seconds
4 feet	<i>f.4.5</i>	$\frac{1}{2}$
"	<i>f.6.3</i>	1
"	<i>f.11</i>	2
"	<i>f.16</i>	4
10 feet	<i>f.4.5</i>	2
"	<i>f.6.3</i>	4
"	<i>f.11</i>	8
"	<i>f.16</i>	16

This table is for portraits and light-colored interiors. For dark-colored interiors without people, double the above exposures.



Upper picture  
made with stop  
*f*.6.3, shutter  
speed  $\frac{1}{75}$  second.  
Result is good



### Effects of Too Slow Shutter Speed



Lower picture  
made with stop  
*f*.8, shutter speed  
 $\frac{1}{15}$  second. Result  
a failure, due to  
movement of  
camera during  
exposure—shutter  
speed too slow  
for hand work





### The Graflex in Hospital Work and for Commercial Purposes

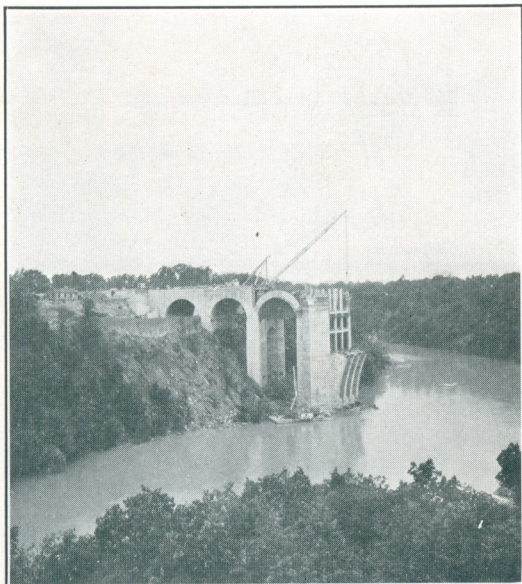
THESE pictures show the wide diversity of subjects that can be photographed successfully with a Graflex.

The upper picture was made with a Graflex, exposure  $\frac{1}{20}$  of a second with stop *f.5.6*. The lower picture was made with an R. B. Auto Graflex, exposure  $\frac{1}{65}$  of a second, stop *f.4.5*, dull gray day.

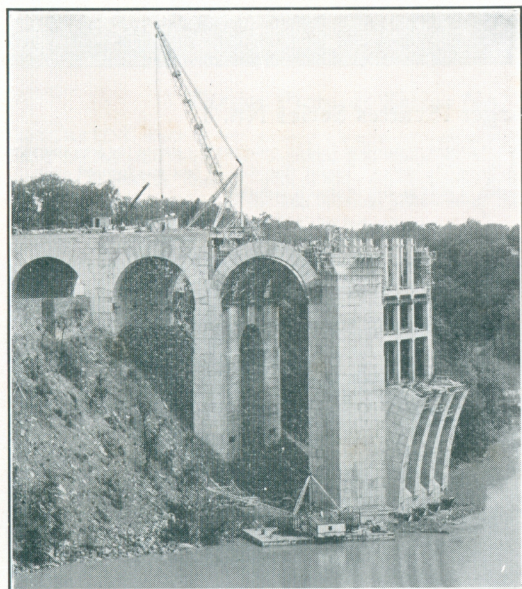




Upper picture  
taken with a  
Graflex fitted  
with  $f.4.5$  lens  
of  $6\frac{1}{2}$  inch  
focal length



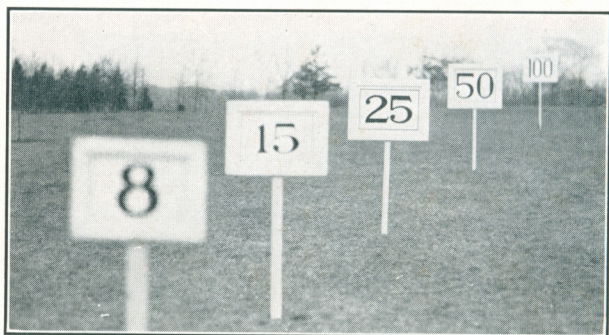
### Advantages of a Telephoto or Long Focal Length Lens



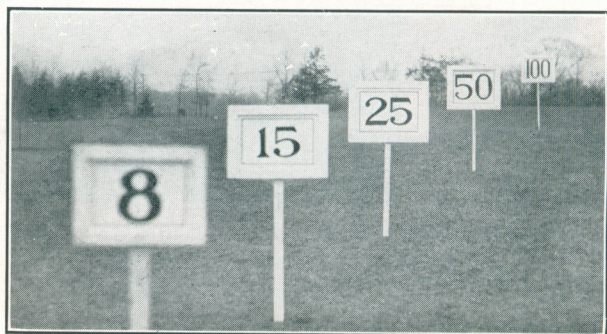
Lower picture  
taken with the  
same Graflex  
fitted with  $f.4.5$   
Telephoto lens of  
14 inch focal  
length. Position  
of camera  
unchanged

Telephoto or  
long focal length  
lenses are  
necessary when a  
large image is  
required of a  
distant object





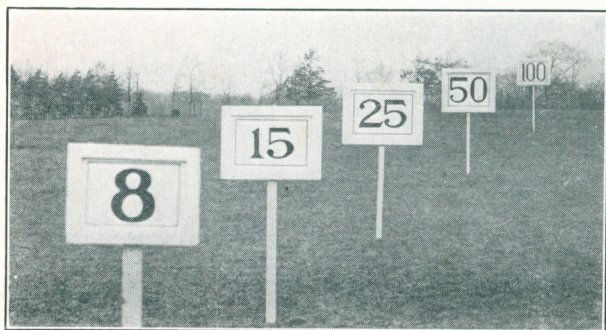
Lens  
Aperture  
*f.4.5*



Lens  
Aperture  
*f.8*

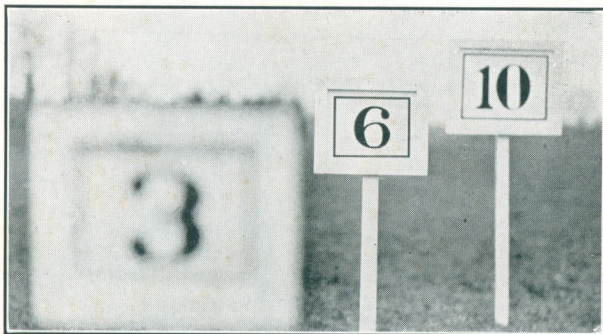
### Target Pictures Series No. 1

**I**LLUSTRATING clearly what is gained in depth of field by reducing the size of the lens aperture.  
Lens used: Anastigmat *f.4.5*, focus  $7\frac{1}{2}$  inches. Target placed at 25 feet was focused upon.  
Note gradual increase in depth of field as size of stop is reduced.

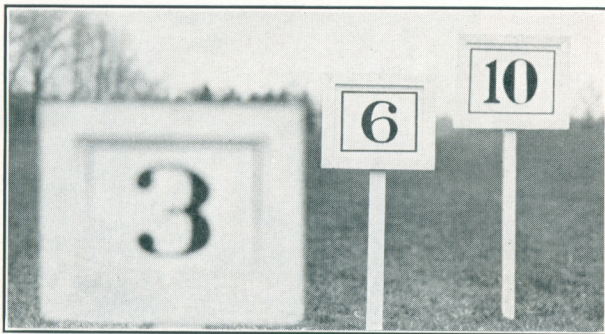


Lens  
Aperture  
*f.16*





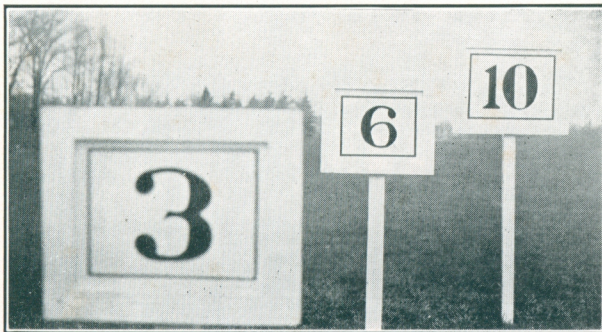
Lens  
Aperture  
*f.4.5*



Lens  
Aperture  
*f.8*

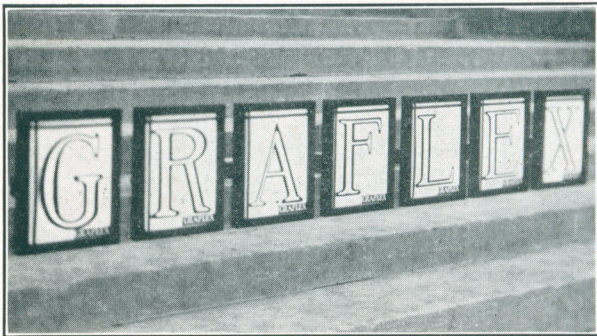
### Target Pictures Series No. 2

**I**LLUSTRATING depth of field obtained when photographing objects at near distances. The above pictures show clearly, in comparison with Series No. 1 of the target pictures, that the depth is not as great in "close up" work as when objects farther away are focused upon. Notice the increase in depth of field as the stop openings are reduced. Lens used: Anastigmat *f.4.5*, focus  $7\frac{1}{2}$  inches. Target placed at 6 feet was focused upon.

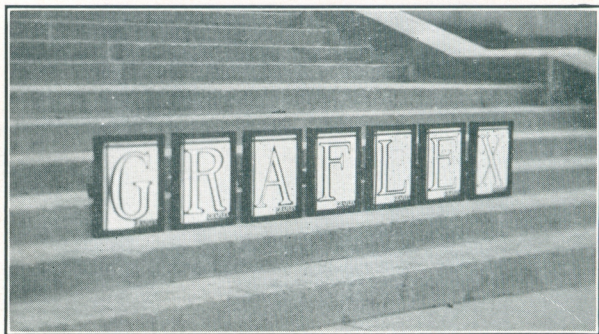


Lens  
Aperture  
*f.16*





Distance  
to  
Subject  
8 feet



Distance  
to  
Subject  
15 feet

### Target Pictures Series No. 3

ILLUSTRATING resulting depth of field when using the same diaphragm opening in the lens, but varying the distance of camera from subject. Lens used: Anastigmat  $f.4.5$ , focus  $7\frac{1}{2}$  inches. All exposures made at  $f.4.5$ . Note decided increases in depth of field.



Distance  
to  
Subject  
25 feet



Left: Made with  $6\frac{3}{8}$  inch  
Anastigmat Lens



Above: Made with  $8\frac{1}{2}$  inch  
Anastigmat Lens



Left: Made with 12 inch  
Anastigmat Lens

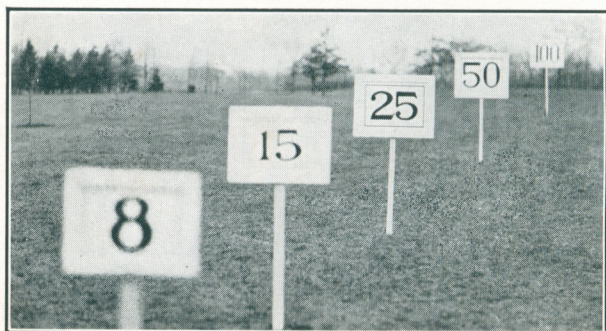
### Target Pictures Series No. 4

ILLUSTRATING relative size of image with lenses of different focal lengths without changing position of camera. Target 25 feet from lens in each instance.





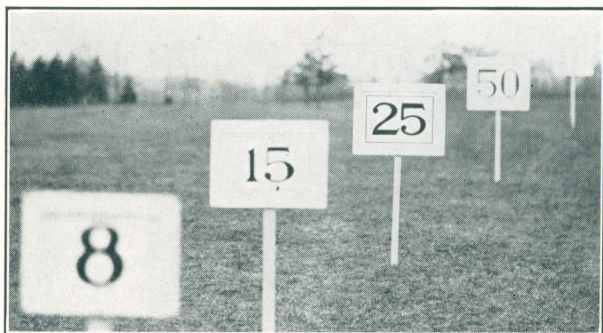
Made  
with  
5½ inch  
focus  
lens



Made  
with  
7½ inch  
focus  
lens

### Target Pictures Series No. 5

SHOWING relative depth of field with lenses of different focal lengths. The target at 25 feet was the one focused on in each instance. Full aperture of lens  $f4.5$ , used in all three pictures. Notice gradual loss of depth with longer focus lenses.



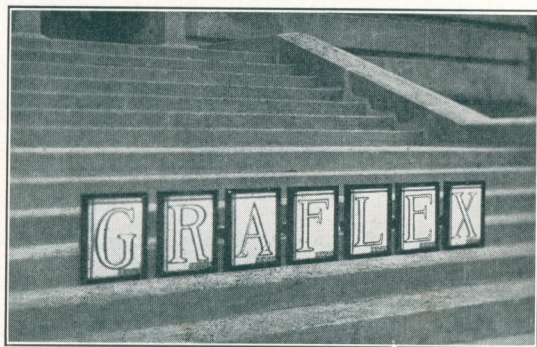
Made  
with  
8½ inch  
focus  
lens





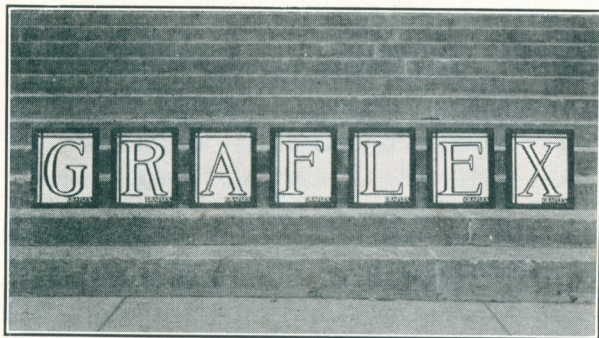
Shows end targets considerably out of focus, camera at angle to subject

Shows increase in definition obtained by moving camera more directly in front of targets



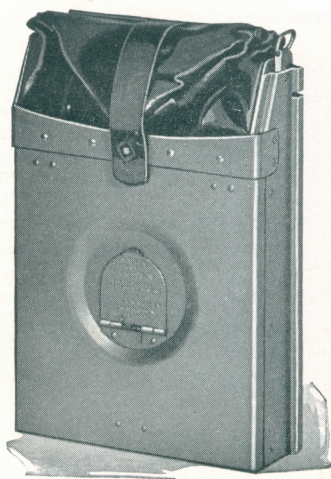
### Target Pictures Series No. 6

**I**LLUSTRATING resulting depth of field by varying position of camera, but keeping about the same distance from subject, using same diaphragm opening  $f.4.5$ , Anastigmat lens used. Distance of lens to subject, about 15 feet.



Shows perfect detail in all images, camera held parallel to targets





## Graflex Plate or Cut Film Magazines

The interchangeable Graflex Cut Film Magazine provides for the convenient use of the great variety of film emulsions available in cut film.

Each of the 12 films, held in the proper plane in a metal septum, may be removed singly or in multiples for development, as the occasion demands.

A flexible light-tight reinforced leather changing bag (shown folded) receives the film as it is withdrawn and re-inserted after each exposure.

The numeral on each septum, indicating the exposure number, is clearly visible through the ruby window which is protected by a spring-actuated cover.

### Graflex Plate Magazine

The Graflex Plate Magazine enables the use of any desired dry plates in appropriate sizes.

#### Details

12 cut films, capacity:  $2\frac{1}{4} \times 3\frac{1}{4}$ — $3\frac{1}{4} \times 4\frac{1}{4}$ — $4 \times 5$ — $5 \times 7$ .

12 plates, capacity:  $3\frac{1}{4} \times 4\frac{1}{4}$ — $4 \times 5$ — $5 \times 7$ .

18 cut films capacity:  $3\frac{1}{4} \times 4\frac{1}{4}$ ,  $4 \times 5$ .

### Telephoto Lenses

TELEPHOTO lenses are designed for use where closeups are unattainable such as in nature and wild animal photography or where large size images of distant subjects are desired. In such cases a telephoto lens with twice the focal length of the regular lens permits the placing of the camera at twice the distance from the object without any loss in the size of the image, or, at the same distance the image is twice the size. Telephoto lenses afford a much sought auxiliary and broaden the scope of the use of the Graflex camera. A complete list of telephoto lenses, suitable for Graflex cameras is available upon request. To assure correct fitting, lenses should be fitted at the Graflex factory.

### Color Photography

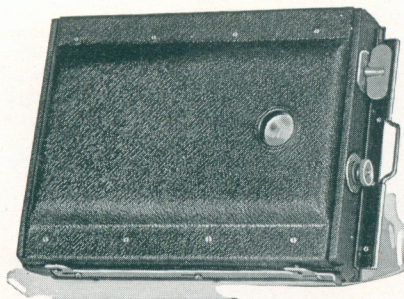
All Graflex cameras accommodating a Graflex Ground Glass Focusing Panel are adapted to color plate photography, since color plates may be used in any standard Graflex Plate Holder.

The difference in register of focus between the color plates and standard dry plates is readily and accurately compensated for, through reversing the ground glass in the panel, assuring sharp, detailed results.

Color films may be used in the standard Graflex Film Holder or Cut Film Magazine. These do not require the reversal of the ground glass screen and correct focus may be determined through the Graflex focusing hood.



## Graflex Roll Holder



Combining roll film convenience with plate-like efficiency, the Graflex Roll Holder is a desirable accessory to Graflex and Speed Graphic cameras with Graflex back.

The recently developed Model C Graflex Roll Holder—provided in  $4\frac{1}{4} \times 3\frac{1}{4}$  and  $5 \times 4$  sizes only—is equipped with a spring-actuated ruby window cover to accommodate Super-Sensitive Panchromatic and Panatomic films as well as Verichrome.

A special film winding device enables tightening the film into the focal plane, rendering exact register for each of the six exposures.

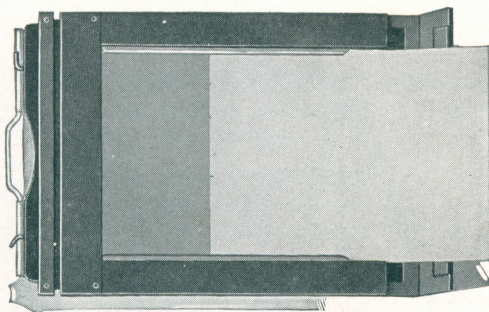
Graflex Roll Holders may be detached or re-attached at will between exposures, and left on the camera when placed in a Graflex carrying case.

Sizes Provided: No. 51,  $4\frac{1}{4} \times 3\frac{1}{4}$ —No. 53,  $5 \times 4$ —No. 54,  $7 \times 5$ .

## Graflex Plate or Cut Film Holders

This accessory too, enables the user to freely select from the broad range of cut films currently available.

The film smoothly slips in or out of the holder, making loading and unloading easy. Narrow channels within the holder accept the film, maintaining the sensitized surface in a uniform flat focal plane.



The Graflex Cut Film Holder is readily detachable and interchangeable with other Graflex accessories. It may remain on the camera in carrying case, loaded and ready for use.

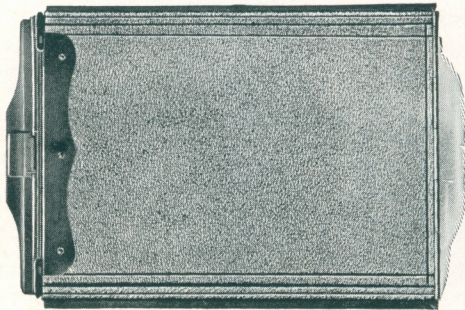
## Graflex Plate Holders

Graflex Plate Holders enable the use of any standard dry plates and color plates in appropriate sizes.

Sizes  $2\frac{1}{4} \times 3\frac{1}{4}$ — $3\frac{1}{4} \times 4\frac{1}{4}$ — $4 \times 5$ — $5 \times 7$ .

*Graphic Cut Film and Plate Holders are provided to fit the  $4 \times 5$  Speed Graphic with Graphic back. Century Holders in the  $5 \times 7$  size.*





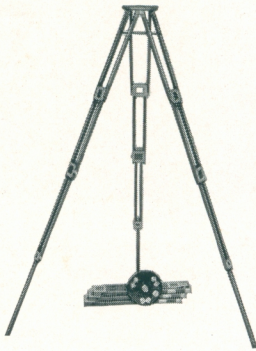
## Graflex Film Pack Adapter

Film packs accommodated in the Graflex Film Pack Adapter have the roll film convenience of daylight loading and unloading, and are available in a variety of emulsions for a broad range of conditions.

Sizes Provided:  $2\frac{1}{4} \times 3\frac{1}{4}$ — $3\frac{1}{4} \times 4\frac{1}{4}$ — $3\frac{1}{4} \times 5\frac{1}{2}$   
— $4 \times 5$ — $5 \times 7$ .

## Graflex Carrying Case

A strong, protective carrying case is available for the Series B, Series D, Auto, Home Portrait Graflex and Speed Graphic Cameras. It is made of genuine sole leather lined with corduroy and fitted with lock and key. In each instance, the carrying case accepts the camera with any Graflex film or plate attachment fitted to it.



## Crown Tripod

Steadiness and strength are required of a tripod. These traits are inherently a part of the rigid, staunch Crown. It is made of selected cherry, oil-soaked and waterproof.

Expansion brackets keep the legs firmly attached when in use; binding screws cannot be lost; joints fit snugly. Because it is well designed and sturdily built, the Crown Tripod continues to be the choice of a wide field of careful photographers.

A sole leather carrying case, consisting of one compartment for the Crown Tripod legs and a second for the tripod top, is available for each of the three larger sizes in which the tripod is provided.

Crown Tripods	Length		Weight of Camera Carried	Diameter of Top
	Closed	Extended		
Junior	17 in.	$3\frac{2}{3}$ ft.	4 lbs.	$3\frac{3}{8}$ in.
No. 1	16 in.	$4\frac{1}{8}$ ft.	6 lbs.	4 in.
No. 2	17 in.	$4\frac{2}{8}$ ft.	9 lbs.	6 in.
No. 4	20 in.	$5\frac{1}{2}$ ft.	18 lbs.	$6\frac{1}{2}$ in.



## You are invited to address the Service Department

**W**E have attempted in this booklet to give all of the essential directions for obtaining successful results through Graflex and Graphic Focal Plane Shutter Photography.

If there are any phases not entirely clear, write our Service Department—on any subject in photography. There is no charge, no obligation.

When sending specimens of results for constructive comment, please accompany negatives with data as to time of day; general weather conditions; principal object focused upon; approximate distance of object from camera; diaphragm opening used; shutter speed. We may have suggestions to offer that will improve your work.

### FOLMER GRAFLEX CORPORATION

Rochester, New York

*Makers of Precision Camera Equipment*

**STUDIO AND COMMERCIAL EQUIPMENT**—The complete line of CENTURY, FOLMER, CROWN, and CIRKUT cameras and equipment serves every professional need.

**PHOTORECORD IDENTIFICATION OUTFIT AND FOLMER IDENTIFICATION UNIT**—These are two units designed to make standardized identification pictures. Both are used by police departments in the detection of criminals and prevention of crime. Correctional institutions and hospitals employ them in the registration of their inmates. Large hotels, department stores and manufacturers use them in photographically recording their personnel and in the issuance of identification passes.

**FINGER PRINT CAMERA AND INSPECTOGRAPH**—Two practical and efficient portable cameras, with built-in illumination, for producing accurate full-sized photographic records of finger prints, signatures, jewelry, fabric patterns and other small objects.



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FOCAL PLANE SHUTTER  
PHOTOGRAPHY

