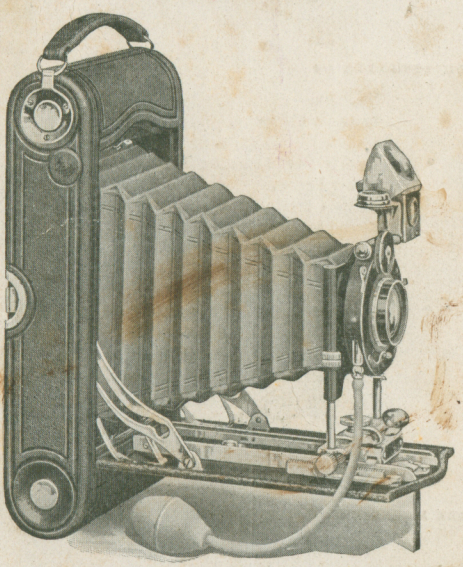
PICTURE TAKING WITH THE

No. 3A Special Kodak



Published by

EASTMAN KODAK CO.,

Rochester, N. Y.

KODAK

Trade Mark, 1888.

EASTMAN KODAK COMPANY

ROCHESTER, N. Y.

MANUFACTURERS OF

Kodaks,
Brownie Cameras,
Kodak Film Tanks,
Kodak Dry Mounting Tissue,
Velox Paper,
Angelo Platinum Paper,
Eastman Solio Paper,
Eastman Ferro-Prussiate Paper,
Eastman Velvet Bromide Paper,
Eastman Royal Bromide Paper,
Eastman Standard Bromide Paper,
Eastman Enameled Bromide Paper,
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Eastman Non-Curling Film,
Tested Chemicals,
Tripods and
Other Specialties.

TRADE MARKS REG. U. S. PAT. OFF.

July, 1912.

PICTURE TAKING WITH THE

No. 3A
SPECIAL KODAK.

PRICE, 10 CENTS.

PUBLISHED BY THE
EASTMAN KODAK COMPANY,
ROCHESTER, NEW YORK.

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BEFORE LOADING.

Before taking any pictures with the 3A Special Kodak read the following instructions carefully and make yourself perfectly familiar with the instrument, taking especial care to learn how to operate the shutter. Work it for both time and instantaneous exposures several times before threading up the film.

The first and most important thing for the amateur to bear in mind is that the light which serves to impress the photographic image upon the sensitive film in a small fration of a second when it comes through the lens, can destroy the film as quickly as it makes the picture. After the film has been developed and all *developer thoroughly washed out*, it may be quickly transferred in subdued white light to the fixing bath without injury. Throughout all the operations of loading and unloading, be extremely careful to keep the duplex paper wound tightly around the film to prevent the admission of light.

EASTMAN KODAK COMPANY,
Rochester, N. Y.

ORDER FILM BY NUMBER

All Kodak Films may be distinguished by the numbers on the ends of the cartons.

122

is the number for film for this camera (No. 3A Special Pocket Kodak). The number appears both on the carton and on the cartridge.

NOTICE

The Duplex paper (black on one side, red on the other,) now used in Kodak cartridges is superior to black paper, in that it has no deleterious effect upon the keeping qualities of the film, and absolutely does away with number markings.

In watching for numbers through the red window, one should now look for black numbers on red paper, instead of, as formerly, white numbers on black paper.

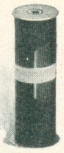
Wherever the term "duplex paper" is used in this manual, reference is made, of course, to this black and red paper.

PART I.

SECTION I.

LOADING WITH FILM.

The film for the No. 3A Special Kodak is furnished in light-proof cartridges and the instrument can, therefore, be loaded in daylight. The operation should, however, be performed in a subdued light, not in the glare of bright sunlight. It should also be borne in mind that after the seal is broken, care must be taken to keep the duplex paper taut on the spool, otherwise it may slip and loosen sufficiently to fog the film.



THE FILM.
No. 122.

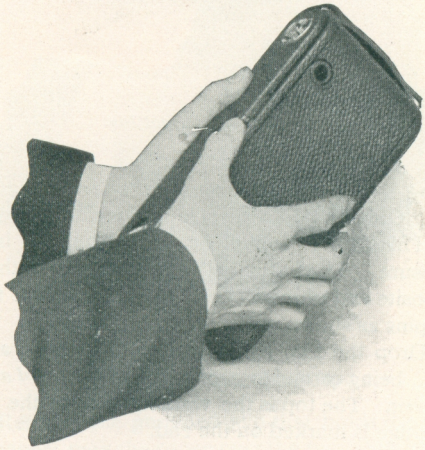


FIG. I.
Removing the Back.

I. To load the Kodak, take a position at a table where the daylight is somewhat subdued, and grasping the instrument with the left hand, remove the back by pressing in simultaneously with the thumb and second finger of the right hand as indicated in Fig. I.

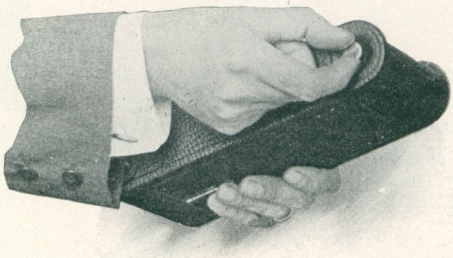


FIG. II.

Springing Out a Spool Pin.

II. The Kodak having been opened, an empty spool having a slit in it will be seen in the winding end of the camera. This forms the reel on which the film is wound after exposure. The full spool is to be placed in the recess at the opposite end of the Kodak. To accomplish this pull out spool pins as shown in Fig. II.

III. Drop the film cartridge into this recess, as shown in Fig. III., being careful to *get the top of the spool at the top of the camera.* The top is the winding side of the camera. Each cartridge is marked on the end.

NOTE.—If the cartridge is inserted wrong end up, the duplex paper instead of the film will be brought next the lens, resulting, of course, in the absolute loss of the pictures.

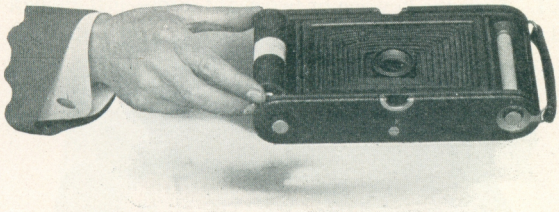


FIG. III.

Inserting the Cartridge.

IV. Push spool pins into place so that spool revolves upon them.

FIG. IV.

Threading up the Duplex Paper.

V. Remove the gummed slip that holds the end of the duplex paper; pass the paper over the two aluminum rollers and thread into the slit in reel, as shown in Fig. IV. Be careful in so doing that the paper draws straight and true.

VI. Give the key one or two slight turns—just enough to bind the paper on the reel—and no more. See Fig. V.

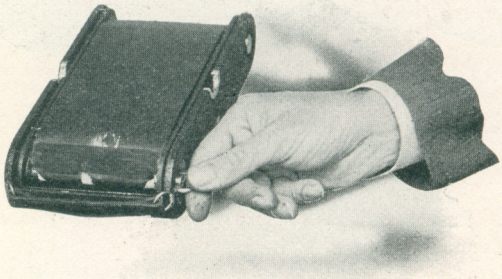


FIG. V.

Turning the Key to bind paper on reel.

The paper should now be in position indicated in Fig. VI.

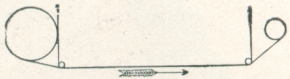


FIG. VI.

Showing position of Paper.

VII. Replace the back on Kodak, being careful to put it on right side up, (the wide catch at the top) and snapping the springs at the top and bottom fully into place. Care should always be taken to handle the back of Kodak carefully, especially when it is detached from camera, as even a slight bend would make it fit badly, resulting very probably in a leakage of light and consequent loss of film.

Throughout the foregoing operation, from the time the gummed slip is cut on the fresh roll of film until the back is once more in place, keep the duplex paper wound tightly on the roll. If it is allowed to loosen, light will be admitted and the film fogged.

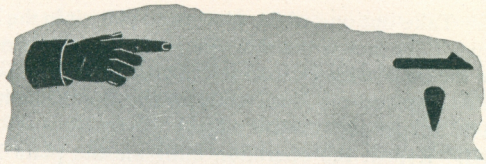


FIG. VII.

VIII. The roll of film in the camera is covered with duplex paper and this must be reeled off before a picture can be taken. Turn the key slowly to the left and watch the little red celluloid window at the back of the camera. When 15 to 18 turns have been given, a hand pointing toward the first number will appear, then turn slowly until the figure 1 is in front of the red window. Fig. VII.

The film is now in position for taking the first picture.

SECTION 2.

LOADING WITH PLATES.

I. In using glass plates the plate holders must be loaded in a dark-room—that is, a room from which all white light has been excluded, as described on page 50.

II. Provide also

No. 3A Special Kodak Combination Back.
No. 3A Special Plate holders.
1 dozen Standard Dry Plates, 3¼ x 5½.
Kodak Dark-room Lamp.
A shelf or table on which to work.

III. Light the lamp and place it upon the table.

IV. Remove the dark slides from the plate holders.

V. Open the box of plates by running a thin knife blade around the edge of the box.

VI. Take out one of the plates and place it in the holder, face up. (The face is the dull side.) Brush gently over the face of the plate with a camel's-hair brush to remove dust.

VII. Replace the dark slide in the holder, with side marked "Exposed" toward plate.

VIII. Repeat the operation until all the plate holders have been filled, then close up the remaining plates in the box, wrap up securely and put them away in a dark drawer.

The remaining operation may be performed in daylight.

IX. Remove the back from the camera as before described. (See page 4.)

NOTE.—There must, of course, be no film in the Kodak when opening it for use with plates.

X. Remove the back of the adapter by pressing down on the inside spring catch and sliding same out. Then insert ground glass panel for focusing, being sure that side marked front faces the lens. Snap the combination back into place, taking care that the springs at each side engage with the catches and that the back is right side up, i. e., the plate holder should draw from the end towards the Kodak handle.

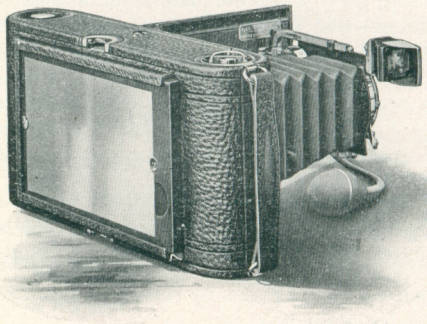


FIG. 1.
Showing Combination Back in Place.

XI. After focusing close the shutter, remove the ground glass, pressing down on catch at the bottom to remove it, and insert one of the plate holders.

XII. Pull out the dark slide. The plate is now in position for making the first picture, and the exposure should be made the same as for films. After making the exposure re-insert the dark slide in plate holder, with side marked "Exposed" out. Remove the plate holder from the camera by means of leather lug, pressing back slightly on same to start it.

PART II.

MAKING THE EXPOSURES.

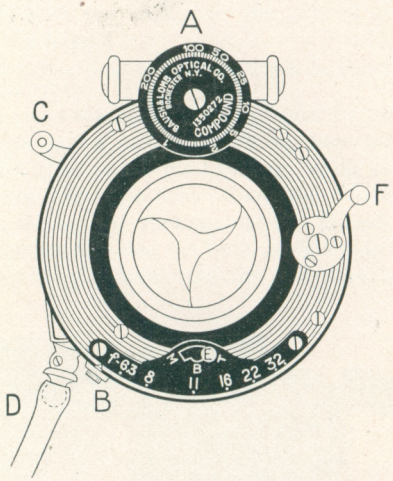
Before making an exposure with the No. 3A Special Pocket Kodak, either time or instantaneous, be sure of four things:

FIRST—That the shutter is set properly.

SECOND—That the diaphragm stop is set at the proper opening.

THIRD—That the camera is focused.

FOURTH—That an unexposed section of the film is turned into position. (Or a fresh plate is ready for exposure.)



SECTION I.

OPERATING THE SHUTTER.

Perfect familiarity with the shutter is essential to successful picture taking with any camera. The following directions

should, therefore, be carefully read and the shutter operated several times before threading the film up for use.

NOTE—To attach the tube D, simply moisten the end a trifle and it will be found to slip into place readily.

INSTANTANEOUS AND RETARDED EXPOSURES.

FIRST—Set knob E at the point M.

SECOND—Revolve disc until the figure representing the time of instantaneous or retarded exposure you desire to make, is opposite to the little white dot at A.

NOTE—This disc is graduated in fractional parts of a second. Thus 1, ½, 1-5, 1-10, 1-25, 1-50, 1-100, and 1-200 parts of a second.

For instantaneous exposures, when the sunlight is unusually strong and there are no heavy shadows, such as in views at the seashore or on the water, or in tropical or semi-tropical countries, a shutter speed of 1-100 of a second and stop f. 16 should be used. With light clouds or slightly smoky atmosphere, use *f.* 11.3 and a speed of 1/50 or 1/25 or f. 8 and a speed of 1/100.

As a general rule, the speed 1-200 should be used only in making snap shots of moving objects in bright sunlight and ordinarily the stop f.6.3 should be employed for all such pictures.

With heavy clouds, do not attempt instantaneous exposures. See page 30.

THIRD—Pull down lever F to its limit of motion.

FOURTH—Set lever B controlling diaphragm openings at proper point according to the time of exposure and subject. See instructions for use of diaphragms, page 30.

FIFTH—Compress the rubber bulb on tube D or press down the release C. *This makes the exposure.*

NOTE—Squeeze the bulb with a firm, quick movement, at the same time be sure to hold the Kodak rigid, as a slight jarring will cause a blurred negative.

TIME EXPOSURES.

FIRST—Set knob E at the point T.

SECOND—Turn disc until Figure I is opposite little white dot at A.

THIRD—Set lever B at F.6.3, 8, 11, 16, 22 or 32, according

to time of exposure and nature of the subject. See instructions for use of stops, page 30.

FOURTH—Press the bulb firmly. This open the shutter. Time exposure by a watch. Again press the bulb. This closes the shutter. Shutter may be opened by pressing release C and closed by a second pressure, if bulb exposure is not desired, but great care should be taken not to jar the camera.

BULB EXPOSURE.

For short time exposures, the bulb exposure is often advantageous.

FIRST—Set knob E at the point B.

SECOND—Turn disc until Figure I is opposite little white dot at A.

THIRD—Set the lever B at *f*.6.3, 8, 11, 16, 22 or 32, as desired. See page 30.

FOURTH—Compress the bulb to open the shutter and release it to close the shutter. This makes the exposure. The shutter will remain open as long as the bulb is under pressure.

NOTE.—This method will not answer for a long time exposure, for when the compressed air has leaked out, the shutter will close of itself.

Do not oil any part of the shutter.

In case of accident, return shutter to your dealer or to us for repairs. As a general rule, make exposures with the bulb instead of release C, as the pneumatic release is less liable to jar the shutter.

THE LENS.

The No. 3A Special Kodak is equipped with a Zeiss Kodak Anastigmat lens, the speed of which is indicated as *f*.6.3, meaning that it will cut sharp to the corners at its full opening, which is 1/6.3 of its focal length.

GET ACQUAINTED WITH YOUR LENS.

The user of any lens should familiarize himself with its limitations as well as with its capabilities. This is particularly true in the case of the Anastigmats, and we therefore ask that those who are not entirely familiar with photographic optics read the following brief explanation, that they may get the full benefit of the power of their lens and that, on the other hand, they do not ask of it the impossible. It should be borne in mind, however, that what we have to say here *is applicable only to lenses of from 5 to 8 1-4 inch focus,* such as are supplied on our hand cameras. These directions make no pretension to covering the entire field of photographic optics.

In comparing the work of one lens with another, you must, first of all, remember that such comparisons must be made with a stop opening of the same relative size (*f.* value). In comparing the Anastigmat with the ordinary Rapid Rectilinear lens, do not expect as great depth of focus with your Anastigmat set at an opening of *f.*6.3 as your R. R. lens gives at its largest opening, *f.*8. The Anastigmat at *f.*8 will give as great depth of focus as will an R. R. of the same focal length with the same opening, while on the other hand, the R. R. will not work at all at *f.*6.3.

NOTE.—It should be borne in mind that the shorter the length of focus, the greater the depth of focus. This explains why very small cameras can have a "fixed focus" (immovable), while larger cameras are all made so that they can be focused.

WHAT DEPTH OF FOCUS MEANS.

Suppose now, that you are using your Anastigmat at the full opening *f.*6.3 and have set the focus at say 15 feet. An object 15 feet distant will be absolutely sharp, but objects 10 and 20 feet distant will not be. Stop your Anastigmat down to *f.*8 or *f.*11.3 and those objects each side of the exact point of focus will materially increase in

sharpness. Go further and use stop *f*.22.6, or a still smaller stop, and everything from 10 feet on to infinity will be sharp. It will thus be seen that the smaller the stop, the greater the depth of focus, i. e., the greater the power of the lens to sharply define, at the same time, objects nearer the camera and further from the camera than the principal object in the picture, which, of course, is the object focused upon. But it is obvious that with the small stops the exposure must be correspondingly lengthened.

ANASTIGMAT SPEED.

Using a stop of *f*.8 or smaller, the advantage of the Anastigmat over the really excellent Rapid Rectilinear lenses furnished with our cameras is not marked, but there is an improvement in definition and in the correctness of lines. But let us suppose that we desire to photograph a rapidly moving object, or to take a picture on a cloudy day. What do we find? The *f* value of a lens denotes the relation of the opening in that lens to its focal length. Suppose, then, that we have a single achromatic lens of 5 inch focus, speed *f*.14, a Rapid Rectilinear lens of 5 inch focus, speed *f*.8, and an Anastigmat lens, speed *f*.6 3, of the same length of focus, 5 inches. How do they compare in speed? To reduce this to its simplest terms we will divide the focal length (five inches) in each case by the *f* value.

$$5 \div 14 = .357$$
$$5 \div 8 = .625$$
$$5 \div 6.3 = .793$$

It will thus be seen that in using the single lens the largest opening is $\frac{357}{1000}$ of an inch in diameter, with the R. R. lens $\frac{625}{1000}$ of an inch, and with the Anastigmat $\frac{793}{1000}$ of an inch. The amount of light admitted by a lens in a given time depends, of course, upon the area of the opening at that

time being used in that lens. The amount of light admitted in a given time with these different lenses would, therefore, be in direct proportion to the square of their diameters. Here, then, omitting the fractions, is the result:

Single lens	.357 × .357 = .127
R. R. Lens	.625 × .625 = .390
Anastigmat lens	.793 × .793 = .628

We thus find that the speed of the R. R. lens is over three times that of the single lens, and the speed of the Anastigmat is 61% greater than the speed of the R. R. lens. Therein lies the greatest Anastigmat advantage. But simply because it has this speed, you don't always need to use it. The speed must be used with discretion, just as greater care is required in operating an automobile than in operating a bicycle.

Under conditions that would give you good results with an R. R. lens at *f*.11.3, use stop *f*.11.3 with your Anastigmat—don't use the largest opening for every occasion; use it only for emergency. Your greatest Anastigmat advantage lies in the fact that when the light is so poor that you cannot get a properly timed negative with your R. R. lens at its greatest opening, *f*.8, without resorting to a time exposure, you can open up your Anastigmat to its full opening and get a successful snapshot.

For the same reason, i. e., because the Anastigmat admits more light in a given time than does the R. R. lens, it is used in connection with high speed shutters for photographing rapidly moving objects. Even in bright sunlight the R. R. lens will not give sufficient illumination to make its use practical with the extremely high speed shutters when worked at their shortest exposures—but the Anastigmat, by reason of the large opening that can be used, enables you to take advantage of the high speed shutter.

SHUTTER SPEED AND LENS SPEED.

Strange as it may seem, there are some amateurs who do not understand the difference between a fast lens and a fast shutter, thinking, apparently, that because they have a fast lens they should catch all moving objects sharply, or because they have a fast shutter that their pictures should be fully timed. The reverse of this proposition is the truth. The fast shutter, by reason of shortening the exposure, cuts down the light and tends toward undertiming.* Remember that these speeds are always relative. Your Anastigmat opened to *f*.6.3 will not give as fully timed a negative in $\frac{1}{200}$ of a second as your R. R. lens will at *f*.8 in $\frac{1}{100}$ of a second. Your *f*.6 3 Anastigmat is 61 per cent. faster, not 100 per cent. faster, than the R. R. lens.

UNFAIR COMPARISONS.

We have had some complaints that the Anastigmats were not giving as fully timed negatives as they should in comparison with the R. R. lens, which our customer had previously used. *In erery case* we have found that the fault was not in the Anastigmat, but in the old shutter with which the R. R. lens was used—such shutter having become dirty, or through the springs weakening or other cause, failing to work at its supposed speed. The result under such circumstances being that the old lens was getting the benefit of a much longer exposure than was intended, while the Compound shutter fitted to the Anastigmat was chopping off the light with greater accuracy.

*This refers in particular to between-the-lens shutters. With a focal plane shutter, such as used in the Speed Kodaks and Graflex Cameras, other factors enter. Such shutters give more illumination of the plate in a given time than between-the lens shutters—but, on the other hand, work many times faster when at full speed.

TWO "STOP" SYSTEMS.

The user of an Anastigmat should bear in mind that there are two systems under which shutters are marked for stop openings, and this must be reckoned with in making comparisons. Most shutters for R. R. lenses are marked on the Uniform System (abbreviated to U. S.), while the shutters for Anastigmats are marked by the *f* system. The *f* value of a stop is the proportion that its opening bears to the focal length of the lens. For instance, *f* 8 means that the diameter of the stop opening is 1-8 of the focal length of the lens, etc. The Uniform System is based on the *areas* of the openings, each next higher number having half the area of the preceding number, and therefore requiring twice the exposuse. For instance: If 1-100 of a second be correct for stop U. S. 4, then, with the same light conditions and stop U. S. 8, 1-50 of a second would be required. However, the two systems are easily compared.

Table.

U. S.	4	-	-	- *f*. 8
U. S.	8	-	-	- *f*.11.3
U. S.	16	-	-	- *f*.16
U. S.	32	-	-	- *f*.22.6
U. S.	64	-	-	- *f*.32
U. S.	128	-	-	- *f*.45.2

There is no exact U. S. designation for *f*.6.3 but it is approximately U. S. 3.

A LAW OF OPTICS.

The larger the stop opening, the less depth of focus. This is not a rule covering any particular lens that we or any one else exploits. It's as fixed as the course of the planets. With a large opening, depth of focus must be sacrificed. In this matter of opening, then, the difference

between the R. R. and the Anastigmat is this: The Anastigmat will cut perfectly sharp on objects *at the focused distance*, over the entire picture with a large opening, admitting a large amount of light, thus requiring a relatively short exposure; but when this large opening is used, there is no great depth of focus. The R. R. lens will not cut the entire picture sharp with this large opening, even if correctly focused. With the smaller opening, as *f*8 etc., the Anastigmat has the same depth of focus as the R. R. lens and gives sharper definition over the entire picture.

DEDUCTIONS.

It is perfectly evident then that it is best to use only a moderately large stop opening (say *f*8 or *f*11.3) even with an Anastigmat, and time accordingly when conditions will permit. However, when the light is dull and a snap shot is desired, the full opening may be used, or if it is desired to photograph rapidly moving objects in good light, the full opening may be used with a high speed of the shutter. It must not be expected, however, that with such full opening, objects in the foreground, in the middle distance and at long distance can *all* be sharp. Set the scale for the correct focus on the principal object and that object will be sharp. *As a rule, your picture will be rather better for having the unimportant parts less sharply defined than the principal subject.*

The Anastigmat will do everything better than the R. R. It will do some things that the R. R. lens cannot do at all—but no lens has yet been invented, or is likely to be that can combine extreme speed with depth of focus, except in very small sizes, or, in other words, except in lenses of very short focus. Even in these, the error, though not noticeable, is there—but that's another story.

SECTION 2.

INSTANTANEOUS EXPOSURES.

Important.—Although with this camera they may be made at 1-200 of a second, all exposures slower than 1-25 of a second must be considered time exposures so far as providing a tripod or other firm support is concerned The camera cannot be held steadily enough in the hand for work at less speed than 1-25 second.

To take instantaneous or snap shot pictures the object should be in the broad open sunlight, but the camera should not. The sun should be behind the back or over the shoulder of the operator.

FIG. I.
Opening the Front.

1.—FOCUS ON THE SUBJECT.

Press the concealed button as shown in (Fig. I.) and push down the bed of camera to the limit of motion.

II. Grasp the springs at bottom of standard, and pull out the front to the metal rack on the bed. (Fig. II.) Then pull out knob of pinion at the base of the standard and rack out front until the pointer is over the figure on the index plate corresponding to the distance in feet of the principal object to be photographed.

NOTE.—The index plate is scaled both by feet and by metres, and care should be taken not to confound them.

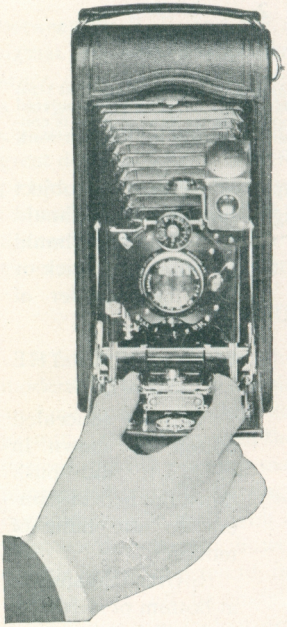


FIG. II.
Extending the Bellows and Focusing.

It is not necessary to estimate the distance with any more than approximate accuracy; for instance, if the focus is set at 25 feet (the usual distance for ordinary street work) the sharpest part of the picture will be the objects at that distance from the camera, but everything from 15 to 35 feet will be in good focus. For general street work the focus may be kept at 25 feet, but where the *principal object* is nearer or farther away, the focus should be moved accordingly. The index plate is divided for 6, 8, 10, 12, 15, 25, 50 and 100 feet. Everything beyond 100 feet is in the 100 foot focus. Nothing nearer than 6 feet can be focused.

FOCUSING WITH PLATES.

When using plates with the combination back, the Kodak may be focused in the same manner as for films, the slight variation in focal plane being provided for by a supplementary focusing scale situated directly under the film scale. Merely lift up on same and the plate scale will appear, or the ground glass *may* be employed for focusing if desired. Insert ground glass in plate adapter: Open the shutter.

Focus carefully with the largest stop before the lens and when the lines show sharp and true close the shutter. Remove the ground glass and insert plate holder.

2.—USE STOP F. 8 AND EXPOSURE 1-100.

For all ordinary out-door work when the sun is very bright use stop *f.* 8 and exposure 1/100. If a smaller stop be used, the light will be so much reduced that it will not sufficiently impress the image on the film and failure will result.

In views on the water when the sunlight is *unusually strong* and there are no heavy shadows, or in tropical or semi-tropical climates, diaphram *f.* 16 may be used.

If a smaller stop opening than *f.* 16 be used for snap shots *absolute failure will result.*

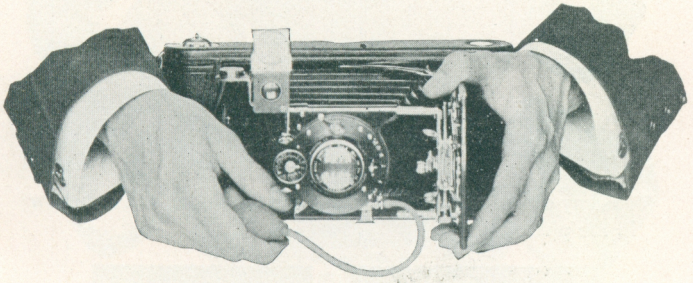


FIG. III.

3—LOCATE THE IMAGE.

Aim the camera at the object to be photographed and locate the image in the finder. For a horizontal picture hold the camera as shown in Fig. III., reversing the finder as indicated. Always look into the finder from directly over it, *not at an angle.* Of course when the focusing glass is employed the image will be located on that instead of in the finder.

For a vertical exposure the camera must be held as shown in Fig. IV. The finders give the scope of view and show a facsimile of the picture as it will appear, but on a reduced scale.

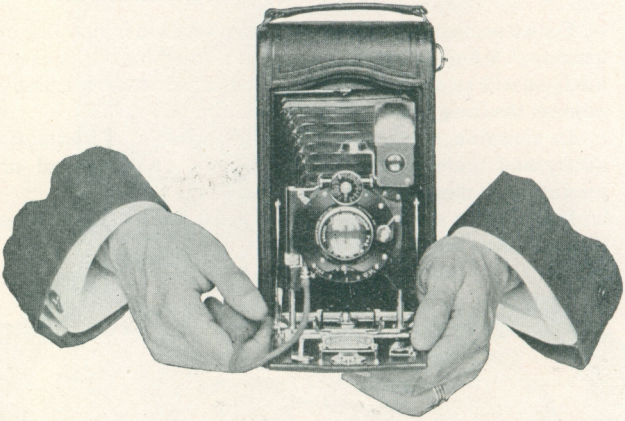
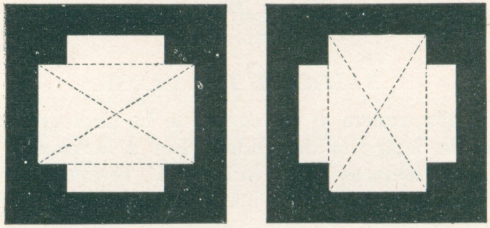


FIG. IV.

Any object that does not show in the finder will not show in the picture.



VIEW INCLUDED WHEN KODAK IS HELD IN HORIZONTAL POSITON

VIEW INCLUDED WHEN KODAK IS HELD IN VERTICAL POSITION

FIG. V.

It will be noticed that the top of the finder is notched as shown in Fig. V. This is done so that the one finder will correctly show the view included when the Kodak is held in either horizontal or vertical position. As the picture taken with the 3A Special Kodak is oblong it will readily be seen that unless the finder was made in this manner it could not correctly show the exact view intended when held in either position.

Remember that only the view indicated in the dotted lines will show in the picture.

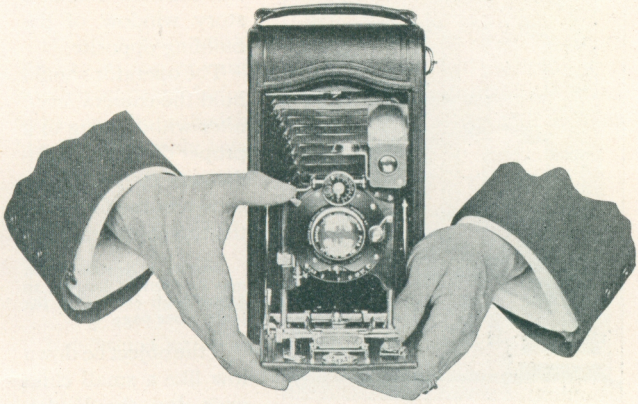


FIG. VI.

Fig. VI. shows how to hold the camera when making an exposure without the use of the bulb. Grasp the bed of Kodak firmly with the left hand, steady it with the right and with the thumb of the right hand lightly touch the exposure lever.

4.—HOLD IT LEVEL.

The Kodak must be held level, a spirit level attached to the finder being provided for leveling. This is especially serviceable when the Kodak is used on a tripod.

If the operator attempts to photograph a tall building while standing near it, by pointing the camera upward (thinking thereby to center it) the result will be similar to Fig. VII.

FIG. VII.

This was pointed too high. This building should have been taken from the middle story window of the building opposite.

The operator should hold the camera *level*, after withdrawing to a proper distance, as indicated by the image shown in the finder on the top of the camera.

NOTE: The rising front may be used in helping to center high objects on the plate. See page 35

If the object be down low like a small child or a dog, the Kodak should be held down level with the center of the object.

5.—COMPRESS THE BULB.

HOLD THE CAMERA STEADY,
HOLD IT LEVEL AND
COMPRESS THE BULB.

This makes the Exposure.

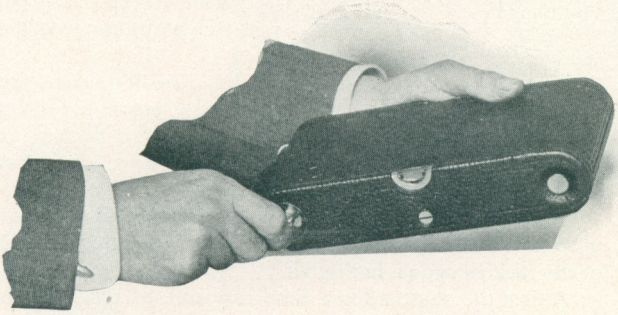


FIG. VIII.

TURN A NEW SECTION OF FILM INTO POSITION: Turn the key in top of camera slowly to the left, until the next number appears before the red window. Three or four turns will be sufficient to accomplish this. The warning hand appears only before No. 1. See Fig. VIII.

Repeat the foregoing operations for each picture.

SECTION 3.

TIME EXPOSURES.

Use Tripod for *all* exposures slower than 1-25 second

INTERIORS.

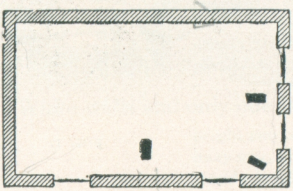


Diagram Showing Position of Kodak.

1. Set camera in such a position that the finder will embrace the view desired.

The diagram shows the proper positions for the Kodak. It should not be pointed directly at a window, as the glare of light will blur

the picture. If all the windows cannot be avoided, pull down the shades of such as come within the range of the Kodak.

To make a time exposure, place the Kodak on some firm support like a table or tripod, and focus as before described.

Fig. I. shows the Kodak in position for a vertical exposure. The Kodak is also provided with tripod sockets and may be used on a tripod.

When it is desired to make a horizontal time exposure without the use of a tripod, pull down lever from the side of the rack as shown in Fig. II.

Adjust the shutter for a time exposure as described on page 11.

All being in readiness, compress the bulb or touch the lever once to open and again to close the shutter. Time the exposure by a watch.

TURN THE KEY.

Turn a new film into position as described before (see page 25).

THE KODAK IS NOW READY FOR THE NEXT INTERIOR EXPOSURE.

Follow the directions given heretofore for each successive exposure.

When the last Interior Exposure is made, adjust the shutter for instantaneous exposures as before directed.

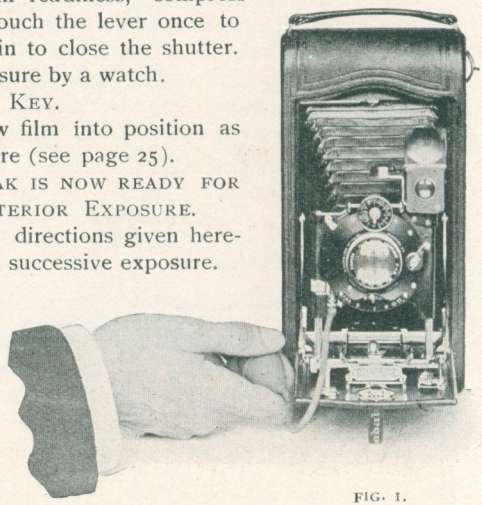


FIG. I.

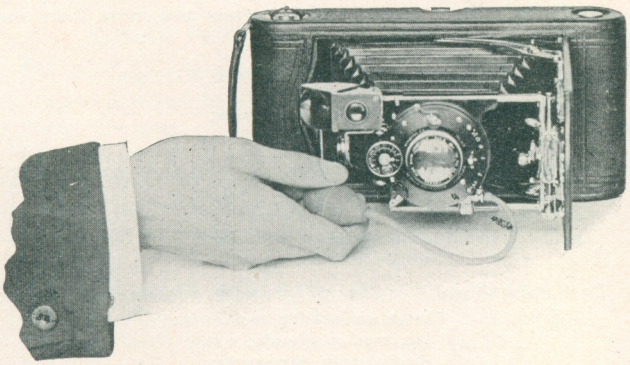


FIG. II.

TIME NEEDED FOR INTERIOR EXPOSURES.

The following table gives the time of the exposure required under varying conditions of light with stop *f.* 16 in the lens. If stop *f.* 11 is used give only one-half the time, with *f.* 8 give one-fourth the time, at *f.* 6.3 give one-sixth the time, if stop *f.* 22 is used give twice the time of the table, at *f.* 32 give four times the time of the table. The smaller the stop the sharper the picture. Stop No. 16 gives the best average results for interiors.

White walls and more than one window :

bright sun outside, 4 seconds;
hazy sun, 10 seconds;
cloudy bright, 20 seconds;
cloudy dull, 40 seconds.

White walls and only one window :

bright sun outside, 6 seconds;
hazy sun, 15 seconds;
cloudy bright, 30 seconds;
cloudy dull, 60 seconds.

Medium colored walls and hangings and more than one window :

bright sun outside, 8 seconds ;
hazy sun, 20 seconds ;
cloudy bright, 40 seconds ;
cloudy dull, 80 seconds.

Medium colored walls and hangings and only one window :

bright sun outside, 12 seconds ;
hazy sun, 30 seconds ;
cloudy bright, 60 seconds ;
cloudy dull, 120 seconds.

Dark colored walls and hangings and more than one window:

bright sun outside, 20 seconds ;
hazy sun, 40 seconds ;
cloudy bright, 80 seconds ;
cloudy dull, 2 minutes, 40 seconds.

Dark colored walls and hangings and only one window :

bright sun outside, 40 seconds ;
hazy sun, 80 seconds ;
cloudy bright, 2 minutes, 40 seconds ;
cloudy dull, 5 minutes, 20 seconds.

The foregoing is calculated for rooms whose windows get the direct light from the sky and for hours from three hours after sunrise until three hours before sunset.

If earlier or later the time required will be longer.

TO MAKE A PORTRAIT.

Place the sitter in a chair partly facing the light, and turn the face slightly toward the camera (which should be at the height of an ordinary table.) Place Kodak in the vertical position and center the image in the finder. For a three-quarter figure the Kodak should be from 6 to 8 feet from the figure ; and for a full figure, from 8 to 10 feet. The background should form a contrast to the sitter. Portraits should not be too sharp, hence we advise the use of stop *f*.6.3 ordinarily for such work.

KODAK PORTRAIT ATTACHMENT.

The attachment is simply an extra lens slipped on over the regular lens and in no way affects its operation except to change the focus.

By means of the Portrait Attachment, large head and shoulder portraits of various sizes may be obtained. With the Attachment in position and the focus set at six feet the subject should be placed exactly 2 feet, 8 inches from the lens.

At 8 feet focus, place the subject 3 feet from the lens.

At 15 feet focus, place the subject 3½ feet from the lens.

At 25 feet focus, place the subject 4 feet from lens.

At 100 feet focus, place subject 4½ feet from lens.

TIME EXPOSURES IN THE OPEN AIR.

When stop *f* 32 is in the lens the light admitted is so much reduced that time exposures out of doors may be made the same as interiors, but the exposure must be much shorter.

WITH SUNSHINE—1/10 second.

WITH LIGHT CLOUDS—From 1/5 to ½ second will be sufficient.

WITH HEAVY CLOUDS—From 1 to 3 seconds will be required.

The above is calculated for the same hours as mentioned above and for objects in the open air. For other hours or for objects in the shadow, under porches or under trees, no accurate directions can be given; experience only can teach the proper exposure to give.

Time exposures cannot be made while the Kodak is held in the hand. Always place it upon some firm support, such as a tripod, chair or table.

For exceedingly short time exposures as above described use the "bulb exposure." See page 12.

DIAPHRAGMS.

The stops should be used as follows:

F 6.3—For quick exposures of moving objects, with shutter speed of 1-200 second. Occasionally for slower speeds on cloudy days; for indoor portraiture.

F. 8—For retarded exposures of 1-50 on *slightly* cloudy days, and for 1-100 exposures in bright sunlight

F. 11—For 1-50 exposures when the sun shines.

F. 16—For instantaneous 1-100 exposures when the sunlight is unusually strong and there are no heavy shadows; such as in views on the seashore or on the water, or in tropical or semi-tropical climates; also for interior time exposures, the time for which is given in the table on page 27.

F. 22 and 32—For interiors. For time or retarded exposures out of doors in deep shadow or on very cloudy days. *Never for instantaneous exposures.* The smaller the stop the sharper the picture.

Absolute failure will be the result if you use the smallest stop for instantaneous exposures.

SECTION 4.

FLASH LIGHT PICTURES.

By the introduction of Eastman Flash Sheets, picture taking at night has been wonderfully simplified. A package of flash sheets, a piece of cardboard, a pin and a match complete the list of essential extras, although an Eastman Flash Sheet Holder is a great convenience.

With flash sheets, no lamp is necessary, there is a minimum of smoke and they are far safer than any other self-burning flash medium, besides giving a softer light that is less trying to the eyes.

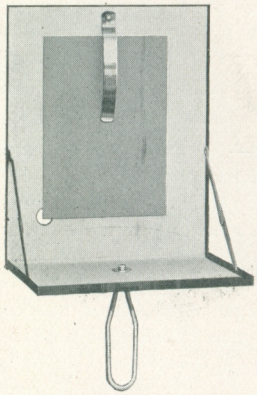
Many interiors can be taken with the flash sheets that are impracticable by daylight, either by reason of a lack of illumination or because there are windows in a direct line of view which cannot be darkened sufficiently to prevent the blurring of the picture.

Evening parties, groups around a dinner or card table or single portraits may be readily made by the use of our flash sheets, thus enabling the amateur to obtain souvenirs of many occasions which, but for the flashlight, would be quite beyond the range of the art.

PREPARATION FOR THE FLASH.—The camera should be prepared for time exposure, as directed on page 25 of this manual (except that the *f*.11 stop must be used), and placed on some level support where it will take in the view desired.

Pin a flash sheet by one corner to a piece of cardboard which has previously been fixed in a perpendicular position. If the cardboard is white it will act as a reflector and increase the strength of the flash.

The flash sheet should *always* be placed two feet behind and two or three feet to one side of the camera. If placed in front, or on a line with front of Kodak, the flash would strike the lens and blur the picture. It should be placed at one side as well as behind, so as to throw a shadow and give a little relief in the lighting. The flash should be at the same height or a little higher than the camera. The support upon which the flash is to be made should not project far enough in front of it to cast a shadow in front of the Kodak. An extra piece of cardboard a foot square placed under the flash sheet will prevent any sparks from the flash doing damage. However, by using the Eastman Flash Sheet Holder, all these contingencies are taken care of, and we strongly advise its use.



THE EASTMAN FLASH SHEET HOLDER.

This holder may be safely held in the hand, *always between you and the flash sheet.* Or it may be used on any Kodak tripod, being provided with a socket for this purpose. The sheet is held by a spring finger, in such position that its lower corner projects part way across the circular opening in the holder, as shown in illustration.

Then to set off the flash, merely touch a match to the corner of the sheet through this opening.

TAKING THE PICTURE.

Having the Kodak and the flash sheets both in position and all being in readiness, open the camera shutter, stand at arm's length and touch a match, from behind, to the lower corner of the flash sheet.

NOTE.—If you are not using the Eastman Flash Sheet Holder, place the match in a split stick at least two feet long.

There will be a bright flash which will impress the picture on the sensitive film. Then close the shutter and turn a fresh film into place with the key, ready for another picture.

THE FLASH SHEET.

The number of sheets required to light a room varies with the distance of the object farthest from the camera, and the color of the walls and hangings.

When two or more sheets are to be used they should be pinned to the cardboard, one above the other, the corners only very slightly over-lapping.

TABLE.

For	10	feet	distance	and	light	walls	and	hangings	use 1 No. 1 sheet.
"	10	"	"	"	dark	"	"	"	" 1 No. 2 "
"	15	"	"	"	light	"	"	"	" 1 No. 2 "
"	15	"	"	"	dark	"	"	"	" 1 No. 3 "

NOTE—Never use more than one sheet at a time in the Eastman Flash Sheet Holder.

TO MAKE A PORTRAIT.—Place the sitter in a chair partly facing the Kodak (which should be at the height of an ordinary table) and turn the face slightly towards the Kodak. The proper distance from the camera to the subject can be ascertained by looking at the image in the finder. For a three-quarter picture this will be from 6 to 8 feet, and for a full figure from 8 to 10 feet.

The flash should be on the side of the Kodak away from the face, that is, the sitter should not face it. The flash should not he higher than the head of the sitter.

For using Portrait Attachment, see page 29.

TO MAKE A GROUP.—Arrange the chairs in the form of an arc, facing the Kodak, so that each chair will be exactly the same distance from the camera. Half the persons composing the group should be seated and the rest should stand behind the chairs. If the group is large any number of chairs can be used, but none of the subjects should be seated on the floor, as sometimes seen in large pictures, because the perspective would be too violent.

BACKGROUNDS.—In making single portraits or groups care should be taken to have a suitable background against which the figures will show in relief; a light background is better than a dark one, and often a single figure or two will

show up well against a lace curtain. For larger groups a medium light wall will be suitable.

The *finder* on the camera will aid the operator in composing the groups so as to get the best effect. In order to make the image visible in the finder the room will have to be well lighted with ordinary lamplight, which may be left on while the picture is being made, provided none of the lights are placed so that they show in the finder.

Eastman Flash Sheets burn more slowly than flash powders, producing a much softer light and are, therefore, far preferable in portrait work ; the subject, however, should be warned not to move, as the picture is not taken *instantaneously*, about one second being required to burn one sheet.

EASTMAN FLASH CARTRIDGES.

Eastman Flash Cartridges may be substituted for the sheets if desired. We recommend the sheets, however, as more convenient, safer, cheaper and capable of producing the best results. The cartridges are only superior where absolutely *instantaneous* work is essential.

SECTION 5.

RISING AND SLIDING FRONT.

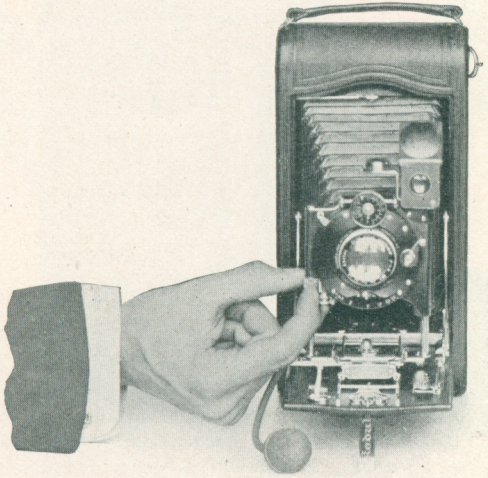


FIG. 1.

The No. 3A Special Kodak is provided with a rising front, which may be utilized in cutting out an undesirable foreground or to assist in taking in the top of a high building, etc. The front will also slide to either the right or left (up and down when used for horizontal pictures.)

Fig. 1 shows how to raise and lower the front when making vertical exposures. The front may be raised or lowered by turning the milled head as shown in Fig. 1. When through using, center lens by moving the front up or down, as the case may be, until the top of front is on a line with top of standard.

The front can be moved to the right or left (up and down when Kodak is placed on its side for horizontal exposure)

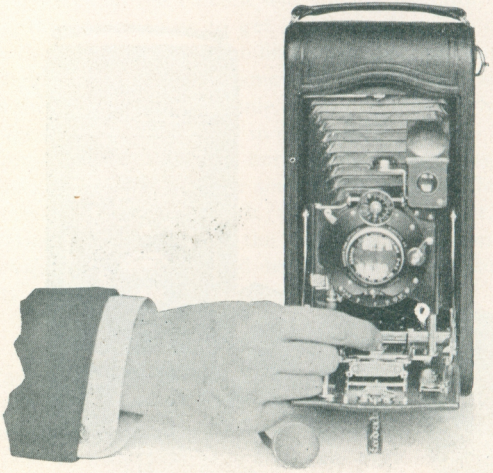
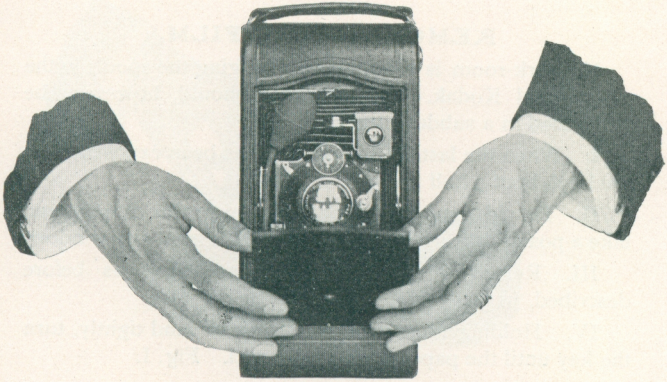


FIG. II.

by turning lever directly under the shutter as shown in Fig. II., and sliding front in either direction to the desired position. Lock in position by pushing over lever. When through using, reverse the operation shown in Fig. II., and slide back to the center line and turn lever to hold in position.

In order to make a sharp picture when using the rising front it will be better to use a small stop (*f*.22 or 32) and as this in turn necessitates a time exposure, a tripod or other firm support must be provided. Experience alone can teach the many ways in which the rising and sliding front may be used for composing artistic pictures.

N. B.– Do not fail to carefully center front before closing camera, as otherwise there is danger of ruining bellows when folding.



When through using the Kodak fold the bellows by reversing the operation shown in Fig. II.. page 20, and press down on arm locks on each side of bed, as shown above. The bed will now close readily.

Before closing the bed of the Kodak, be careful to see that the front board has been pushed in to the limit of motion. If it is in proper position it will not interfere with the bed in closing.

PART III.

REMOVING THE FILM.

No dark-room is required for changing the spools in the 3A Special Kodak. The operation should, however, be performed in a subdued light.

I. When the last section of film has been exposed, turn the key about 5 half turns.

II. Provide an extra spool of film to fit this camera, and take a position by a table as far as possible from any window.

III. Remove the back from the Kodak as before described, page 4.

IV. Holding the paper taut, so as to wind tightly, turn the key until the paper is all on the reel. Fig. I.

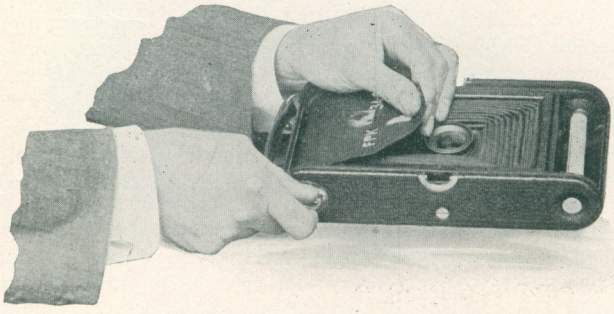


FIG. I.

V. Hold ends of duplex paper and sticker together to prevent paper from loosening on reel.

NOTE.—If sticker folds under roll, raise it up with the point of a lead pencil.

VI. Pull out spool pin and winding key, and lift out roll of film as shown in Fig. 2.

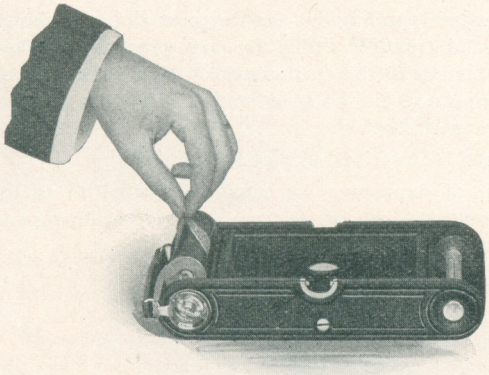


FIG. II.

Removing the Cartridge of Exposed Film.

VII. Fold over half inch at end of duplex paper (so as to make subsequent breaking of the seal easy), and then seal with sticker.

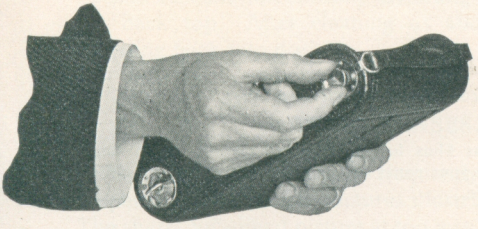


FIG. III.

Pulling Out Center Pins to Remove Empty Spool.

VIII. Wrap up exposed film immediately to prevent the possibility of light being admitted.

IX. Now take out the empty spool by drawing out the center pins which hold it in place.

X. Slip this spool into place at the winding side of camera (this will

form the new reel) pulling out the key in so doing as shown in Fig. IV. and carefully fitting the web which is attached to key into the slot in the end of spool. Now push the axis pin in the opposite end of spool until it is fixed in position by the embossed stop.

XI. Load as described in part I., page 3.

The roll of exposures can now be mailed to us for finishing (see price list) or you can do the developing and printing yourself.

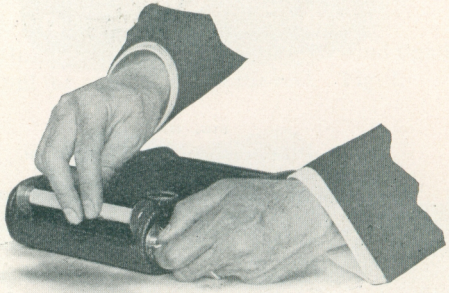


FIG. IV.

Pulling Out Key to Admit New Reel.

NOTE: In mailing us films for development do not fail to mark the package plainly with your name and address and write us a letter of advice, with remittance.

"CINCH MARKS."

If the film and paper loosen up a trifle when taken from the camera, many amateurs are likely to take the cartridge in the hand and wind it as closely as possible, cinching it

tightly with a twisting motion. There's nothing more likely to injure the negative than this tight drawing of the film as it abrades the surface, making fine parallel scratches running lengthwise of the film, which in some cases, will ruin the negative. *Do not "cinch" the cartridge.* It simply needs to be wound tightly enough so that the duplex paper keeps inside the flanges.

DIMMED FINDERS AND HOW TO MAKE THEM BRIGHT AGAIN.

For some cause which is not thoroughly understood, glass will sometimes "sweat" to such an extent as to cover it with a sort of film, which, of course, makes it very dull whether it be used as a lens or mirror.

Whatever the cause, the result is the occasional dimming of finders and lenses. With finders the trouble is sometimes in the mirror, which necessitates opening the finder and wiping the mirror by means of a soft cotton cloth.

Access may be had to the brilliant finders on the No. 3A Special Kodaks for cleaning by lifting up front and swinging back top. After cleaning as above close by simply snapping back into position.

CLEAN LENSES.

Dirty or dusty lenses are frequently the cause for photographic failures. These pictures illustrate this point clearly. The sharp, full-timed picture at top was taken with the lens clean and in good order. To produce the effect shown in the picture at bottom, the operator lightly touched the face of the lens with his thumb, which was slightly damp with perspiration.

Lenses should be frequently examined by looking *through* them, and if found to be dirty, should be wiped, both front and back, with a clean, soft linen handkerchief. Large spots of dust or dirt on the lens will cause defects in the picture, while if the lens is evenly covered with a film of dust, dirt or moisture, the effect will be to cut off a great deal of light and make the picture undertimed.

Clean Lens.

Lens Slightly Dirty.

KEEP DUST OUT OF THE CAMERA.

Defective negatives are often caused by particles of dust which have collected on the inside of the camera and settled upon the film in particles that produce small white spots upon the prints.

It is therefore well to wipe out the inside of camera and bellows occasionally, with a slightly damp cloth. In Summer weather or after the camera has remained idle for any length of time, this needs special attention.

PART IV.

DEVELOPING.

There is no necessity of working in a dark-room or waiting until night to develop film. It can be done in daylight at any time and place. And the daylight method of developing film gives better results than the dark-room way.

Film may be developed in daylight by the Kodak Film Tank method. Detailed directions for developing will be found in the manual which accompanies the goods. The operation is given briefly in the following pages.

We recommend the Kodak Film Tank method particularly for its simpleness, and the uniformly good negatives which it gives.

DEVELOPING WITH THE KODAK FILM TANK.

For use with No. 3A Special Kodak provide a 3½ inch Kodak Film Tank.

The Kodak Film Tank consists of a wooden box, a light-proof apron, a "transferring reel," a metal "solution cup" in which the film is developed, and a hooked rod for removing film from solution. There is also a dummy film cartridge with which one should experiment before using an exposed cartridge. The various parts of the outfit come packed in the box itself.

1. Take everything out of the box. Take apron and Transferring Reel out of solution cup.

2. Insert the axles marked C and D in the cut, in the holes in front of box. The front will be toward you when the spool carrier in end of box is at your right.

3. The axle "C" must be pushed through the hollow spindle which will be found loose in the box. The two lugs on this spindle are to engage the hooks at the end of apron.

The axle "D" must be pushed through the hollow rod of the Transferring Reel to hold reel in position as indicated in the illustration. The flanges at each end of the Transferring Reel are marked "Y" in the illustration.

4. Attach one end of the apron to spindle through which axle "C" passes by means of the metal hooks which are to be engaged with the lugs on the spindle. The corrugated side of the rubber bands is to be beneath the apron when it is attached. Turn to left on axle "C" and wind the entire apron on to spindle, maintaining a slight tension on apron in so doing by resting one hand on it.

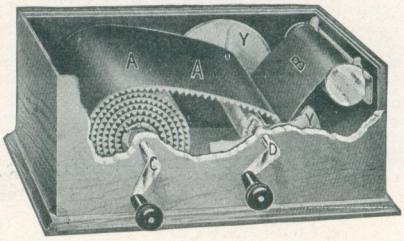


FIG. I.

5. Insert film cartridge in spool carrier and close up the movable arm tight against end of spool. Have the duplex paper ("B" in Fig. 1) lead from the top.

IMPORTANT,

Film to be used in the Kodak Film Tank must be fastened to the duplex paper at both ends. All films are fastened at one end at our factory. For instructions on how to fasten the other end, see Film Tank Manual.

6. Break the sticker that holds down the end of duplex paper, thread the paper underneath the wire guard on transferring reel through which axle "D" passes (Fig. II,) and turn axle slowly to right until the word "stop" appears on duplex paper.

7. Now hook apron on to lugs on axle "D" in precisely the same manner that you hooked the opposite end to axle "C" except that axle "D" turns to the right.

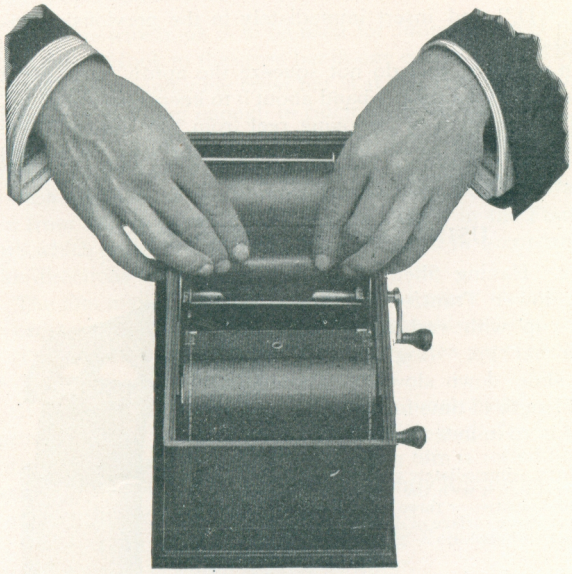


FIG. 11.

8. Turn handle half a revolution so that apron becomes firmly attached and put on cover of box. Turn axle "D" slowly and steadily until duplex paper, film and apron are rolled up together on transferring reel. As soon as this is completed the handle will turn very freely.

9. Prepare developing solution in solution cup according to directions in Kodak Film Tank Manual.

10. Remove cover from box and draw out axle "D," holding apron and duplex paper with other hand to keep end of apron from loosening.

11. Remove entire Transferring Reel (now containing apron, duplex paper and film) which is freed by pulling out

axle "D," and insert immediately in the previously prepared developer.

In removing reel do not squeeze the apron, but hold it loosely or slip a rubber band about it to keep from unrolling.

The operation of removing reel from box can be done in the light of an ordinary room, but for safety it is well that the light should not be too bright..

USING THE SOLUTION CUP.

12. Having filled Solution Cup, lower Transferring Reel into cup with end containing cross bar up. (Fig. 3) Let reel slide down slowly. The total length of time for development is 10 minutes.

FIG. III.

NOTE.—Immediately after lowering reel into solution cup catch it with the wire hook and move gently up and down two or three times, but not allowing reel to come above surface of developing solution. This is to expel air bubbles.

Allow development to proceed for about two minutes with cover of solution cup off; then place the cover on the cup (Fig. 4) putting lugs on cover into grooves and tighten cover down by turning it to right.

FIG. IV.

Now turn the entire cup end for end and place in tray or saucer to catch any slight leak from the cup. After seven minutes reverse it so cover will be up. At fifteen minutes, again invert the cup. Turning the solution cup allows the developer to act evenly and adds brilliancy and snap to the negatives.

13. The wire hook is to be used for lifting the reel out of the cup. Hook to the cross bar in one end of reel. When the end of reel containing cross bar is at the bottom of cup, the hook is just long enough to catch the cross bar.

14. When developing is completed pour out developer and fill cup with clear, cold water, and pour off three times to wash the film. Then remove Transferring Reel, separate film from duplex paper and place immediately in the Fixing Bath which should be in readiness, prepared in accordance with directions on page 52.

The film may be separated from duplex paper in light of an ordinary room if the developer is thoroughly washed out.

The operation of separating film and duplex paper should be done over a bowl, bath tub, or sink.

If the tank is not to be used again immediately, the apron and tank should be washed and wiped dry. The apron must always be perfectly dry when film is rolled up in same. The apron will dry almost instantly if immersed for a moment in very hot water.

Keep apron wound on Transferring Reel when not in use, Never leave apron soaking in water.

TIME AND TEMPERATURE FOR TANK DEVELOPMENT.

It sometimes happens that the amateur is not able to obtain or maintain the standard or normal temperature of 65 degrees Fahr. when using the Kodak Tank and the Kodak Tank Developer Powders. In such cases the following table will be found of value:

Temperature	Time One Powder	Time Two Powders
70 Degrees	15 Minutes	8 Minutes
69 "	16 "	
68 "	17 "	9 "
67 "	18 "	
66 "	19 "	
65 " NORMAL	**20 " NORMAL**	**10 " NORMAL**
64 "	21 "	
63 "	22 "	
62 "	23 "	11 "
61 "	24 "	
60 "	25 "	
59 "	26 "	12 "
58 "	27 "	
57 "	28 "	
56 "	29 "	13 "
55 "	30 "	
54 "	31 "	
53 "	32 "	14 "
52 "	33 "	
51 "	34 "	
50 "	35 "	15 "
49 "	36 "	
48 "	37 "	
47 "	38 "	16 "
46 "	39 "	
45 "	40 "	17 "

Temperature of Developer must not exceed 70 degrees Fahr., as above that point there is danger of the film frilling. 45 degrees Fahr. is the lowest temperature at which the developing powders can be dissolved and even at this temperature the powder must be finely crushed and added slowly to the water.

It is best to use the normal temperature (65 degrees) when possible as the use of a developer that is colder than normal has a slight tendency to increase the contrast in a negative while the use of a developer warmer than normal slightly flattens the resulting negatives.

DEVELOPING SEVERAL ROLLS OF FILM AT ONCE.

Several rolls of film may be developed at the same time if the operator wishes. To do this it is necessary to have a "Duplicating Outfit" consisting of 1 Solution Cup, 1 Transferring Reel and 1 Apron for each additional roll of film to be developed. The extra rolls of film may then be wound on to Transferring Reels as previously described and immersed in the Solution Cups.

DEVELOPING IN DARK-ROOM.

Provide the following articles :

1 Kodak Dark Room Lamp,
4 Developing Trays,
1 4-ounce Graduate,
1 Stirring Rod,
1 Pk'g Eastman Special Developer Powders,
1 Pound Kodak Acid Fixing Powder.

Also provide a pair of shears, a pitcher of cold water (preferably ice water) a pail for slops, and a *dark-room* having a shelf or table.

By a dark-room is meant one that is wholly dark – not a ray of light in it. Such a room can easily be secured at night almost anywhere. The reason a dark-room is required is that the film is extremely sensitive to white light, either daylight or lamplight, *and would be spoiled if exposed to it*, even for a fraction of a second.

Having provided such a room or closet, where, when the door is closed, no ray of light can be seen :

Set up on the table or shelf the Kodak Dark-Room Lamp, and light it as directed in the circular which comes in the box in which the lamp is enclosed.

The lamp gives a subdued red light which will not injure the film unless it is held too close to it. Set the lamp on the table at least eighteen inches from and with the *side* toward the operator. Never use a yellow light with N. C. Film or fog will be the result.

1. Fill one of the trays nearly full of water (first tray).

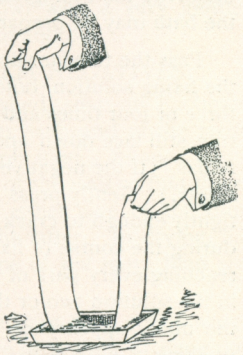
2. Open one of the developer powders, then put the contents (two chemicals) into graduate and fill it up to the 4-ounce mark with water. Stir until dissolved with the wooden stirring rod and pour into second tray.

3. To develop, unroll the film and detach the entire strip from the duplex paper.

4. Pass the film through the tray of clean, cold water as shown in the cut, holding one end in each hand. Pass

through the water several times, that there may be no bubbles remaining on the film. When it is thoroughly wet, with no air bubbles, it is ready for development.

5. Now pass the film through the developer in the same manner as described for wetting it and shown in cut. Keep it constantly in motion, and in about one minute the high lights will begin to darken and you will readily be able to distinguish the unexposed sections between the negatives, and in about two minutes will be able to distinguish objects in the picture. Complete development in the strip, giving sufficient length of development to bring out what detail you can in the thinnest negatives. There is no harm in having your negatives of different density. This can be set right in the printing. The difference in density does not affect the difference in contrast.



Keep the strip which is being developed constantly in motion, allowing the developer to act 5 to 10 minutes. The progress of development may be watched by holding the negatives up to the lamp from time to time.

When developing Eastman N. C. Film, use a red lamp and take care not to hold the film close to the lamp for any length of time. This film is very rapid and is orthochromatic, therefore liable to fog unless handled very carefully.

6. After completing development transfer to the third tray and rinse two or three times with clear, cold water, and transfer to fixing bath. (Page 52).

NOTE—If preferred the negatives may be cut apart and fixed separately.

FIXING.

Provide a box of Kodak Acid Fixing Powder and prepare a fixing bath as follows: Remove the cover from the box and pour into the cover enough of the fixing powder to fill the cover level full. Put this into a tray (fourth tray of an Eastman developing outfit) or wash bowl and add eight ounces of cold water. When the powder has thoroughly dissolved add to the solution as much of the Acidifier, which you will find in a small box inside the large one, as will fill the cover of the small box level full. As soon as this has dissolved the Fixing Bath is ready for use. Any quantity of the bath may be prepared in the above proportions.

Pass the film face down (the face is the dull side) through the fixing solution, holding one end in each hand. Do this three or four times and than place one end of the film in the tray still face down and lower the strip into the solution in folds. (If the negatives have been cut apart immerse them singly.) Gently press the film where the folds occur, not tightly enough to crack it, down into the solution a few times during the course of fixing. This insures the fixing solution reaching every part of the film. Allow the film to remain in the solution two or three minutes after it has cleared or the milky appearence has disappeared. Then remove for washing.

N. C. Film must always be fixed in an acid bath. There is nothing superior to the Kodak Acid Fixing Bath, but the following formula may be used if desired:

Water,	16 ounces.
Hypo Sulphite of Soda,	4 ounces.
Sulphite of Soda (desiccated),	¼ ounce.

When fully dissolved add the following hardener:

Powdered Alum,	⅛ ounce.
Citric Acid,	⅛ ounce.

This bath may be made up at any time in advance and may be used so long as it retains its strength, or is not sufficiently discolored by developer carried into it, as to stain the negatives.

Drying with Clips.

WASHING.

There are several ways of washing film. It may be placed in tray or wash bowl of cold water and left to soak for five minutes each in five changes of cold water, moving about occasionally to insure the water acting evenly upon it, or it may be given, say two changes as above and then left for an hour in a bowl with a very gentle stream of water running in and out.

DRYING N. C. FILM NEGATIVES.

When thoroughly washed, snap an Eastman Film Developing Clip on each end of the strip and hang it up to dry or pin it up. Be sure, however, that it swings clear of the wall so that there will be no possibility of either side of the film coming in contact with the latter. In drying, N. C. Film should be cut up into strips of *not more* than six exposures in length.

In tray development when the film has been cut up separately, pin by one corner to the edge of a shelf or hang the negatives on a stretched string by means of a bent pin, running the pin through the corner of film to the head, then hooking it over the string.

DEFECTIVE NEGATIVES.

By following closely the foregoing directions, the novice can make seventy-five per cent., or upwards of good negatives. Sometimes, however, the directions are not followed, and failures result.

To forewarn the camerist is to forearm him and we therefore describe the common causes of failure.

OVER-DEVELOPMENT.

Over development may be caused by a mistake in leaving film in the developer too long; by using solution too warm or by those who mix their own developer in getting the developing agent too strong.

In this case the negative is very strong and intense by transmitted light and requires a very long time to print. The remedy is to reduce by use of Eastman Reducer or the following method:

REDUCER.

First soak negative 20 minutes in water, then immerse in

Water, - - - - - - - - - -	6 ounces.
Hyposulphite of Soda, - - - - - -	½ ounce.
Ferri Cyanide Potassium (saturated solution)	20 drops.

Rock tray gently back and forth until negative has been reduced to the desired density, then wash 10 minutes in running water or in four changes of water.

Negatives may be reduced locally by applying the above solution to the dense parts with a camel's hair brush, rinsing off the reducer with clear water occasionally to prevent its running into the parts of the negative that do not require reducing.

UNDER-DEVELOPMENT.

An under developed negative differs from an under-exposed one, in that it is apt to be thin and full of detail, instead of harsh and lacking in detail.

This defect would be caused by a mistake in removing film from the developer too soon, by using solution too cold or by an error in compounding chemicals. It is obvious that neither of these defects will occur in Tank Development if instructions are properly followed.

INTENSIFICATION BY RE-DEVELOPMENT.

There are a number of different processes for intensifying under-developed negatives, the most common being by means of Bichloride of Mercury, and Sodium Sulphite or Ammonia.

This method, though simple to use, has its disadvantages, as it builds up the highlights out of proportion to the weaker portions of the negative, and also, unless carefully handled is apt to produce iridescent stains or granular markings that are impossible to remove.

While the method of intensification by re-development is only comparatively new, the now common use of Velox and Royal Re-developer for Sepia tones on Velox and Bromide prints, will make this the most effective means of intensification.

Velox or Royal Re-developer may be used in exactly the same manner as for producing Sepia tones on developing paper.

Negatives intensified by re-development are built up evenly, without undue contrast and without the chance of staining.

The advantage of being able to use the chemicals for two different purposes (Sepia toning prints or intensifying negatives) is obvious, the result in either case being all that could be desired.

PART V.

PRINTING ON VELOX PAPER.

Eastman N. C. Film negatives yield beautiful, soft black and white effects when printed on Velvet Velox.

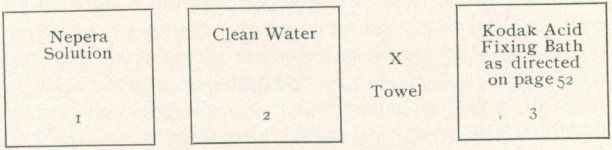
MANIPULATION.

Velox prints may be successfully made, using daylight for exposure. Select a north window, if possible, as the light from this direction will be more uniform. *Owing to its sensitiveness the paper should be handled in subdued light, otherwise it will be liable to fog.* Proper precautions should be taken to pull down the window shades and darken the room sufficiently during manipulation. If the light is too strong for printing it should be subdued or diffused by the use of several thicknesses of white tissue paper. Owing to the varying intensity of daylight, uniform results are not as certain as when using artificial light. In the following instructions for manipulating Velox, it must be understood that artificial light, preferably gas with a Welsbach burner, will be the light used. A kerosene lamp, fitted with a round burner (known as Rochester burner), may be used, but owing to the decidedly yellow light this affords, a considerably longer exposure will be necessary than when using a Welsbach light.

The comparative exposure with various sources of light is as follows:

Size of Negative	Distance from Light	Welsbach Burner	32 C. P. Elec. or 6 ft. Gas Burner	16 C. P. Elec or 4 ft. Gas Burner	Average Oil Lamp
3¼ x 5½ or Smaller	7 Inches	10 Sec.	20 Sec.	30 Sec.	40 Sec.

Having provided a suitable light and a convenient place to work, arrange three trays before you on your work table in this order :



Proper temperature is important and for best results the developer should be 70 degrees Fahr. and the fixing bath and wash water 50 degrees Fahr. If the developer exceeds 70 degrees the prints are liable to fog and the emulsion soften. If too cold, chemical action is retarded, resulting in flat, weak prints.

PRINTING.

Velox may be safely manipulated ten feet from the ordinary gas flame.

Having everything in readiness, open the printing frame and lay the negative back down upon the glass—(the back is the shiny side). Place upon the negative a sheet of the Velox paper face down.

The paper curls slightly, the face or sensitive side being concave ; an absolute test is to bite the corner of the sheet ; the sensitive side will adhere to the teeth.

The paper not used must be kept covered in its envelope.

Place the printing frame the correct distance from the artificial light used, holding the frame away from the burner a distance equal to the diagonal of the negative. See exposure table, page 56.

We suggest, before making the first exposure, the cutting of a piece of Velox paper into strips about an inch wide and placing one of them over an important part of the negative, make the exposure, using your best judgment as to

the distance from the light and the time of printing. Develop it, and if not satisfactory try another strip, varying the time as indicated by the first result. When the desired effect is secured, you can make any number of prints from the same negative, and if the time of exposure, distance from light as well as the time of developing are identical, all the prints should be equally good. By comparing your other negatives with the one you have tested, you will be able to make a fairly accurate estimate of exposure required by any negative.

After taking the exposed piece of paper from the printing frame, in a safe place previously selected, it is ready for development. The dry print should be immersed face up in the developer (Tray No. 1) and quickly and evenly covered with the solution. Regular Velox should be developed not to exceed twenty seconds ; Special Velox about twice as long. No exact time can be given as the strength of developer used would make a difference in the time.

As soon as the image has reached the desired depth, remove from the developer to the second tray and rinse for a moment, turning the print several times, then place it in the acid fixing bath (Tray No. 3) keeping the print moving for a few seconds, the same as was done when rinsing, so as to give even and thorough fixing, preventing stains and other troubles. Leave the print in this solution until thoroughly fixed; this will take about fifteen minutes. When fixed, remove from the fixing bath and wash thoroughly for about an hour in running water, then dry. After drying, prints may be trimmed and mounted.

Do not use a fixing bath that has been used for fixing film.

You should be systematic in working, remembering that cleanliness is essential in photography. Care must be taken to prevent the Hypo fixing bath in any way getting into the

tray containing the developer. Have a clean towel when beginning the work and wipe your hands each time after you have handled prints in fixing bath.

DETAILS.

CLEAN DISHES: CLEAN HANDS: The faintest trace of Hypo-Sulphite of Soda will spoil the prints if it gets into contact with them before the proper time. Great care should therefore be used to have both hands and trays clean.

DEVELOPER once used should not be carried over and used the next day or subsequently.

DON'T.

Don't use a tray for developing which has previously been used for hypo solution, pyro developer or final washing.

Don't use an old fixing solution, it is liable to cause trouble.

DIFFICULTIES: Their Cause and Remedy.

VEILED WHITES: Caused by forcing development, fogged paper.

REMEDY: Give more time, screen light. Also caused when image flashes up in developer by too much exposure, in which case give less time.

MUDDY SHADOWS: Caused by developer being used for too many prints. Remedy, use fresh developer.

CONTRASTY PRINTS: Caused by insufficient time or negative too harsh. Remedy, give more time; make softer negatives.

FLAT PRINTS: Caused by overtiming or negatives flat. Remedy, give less time in first instance, and if trouble is with negatives, give negative less time; develop further.

STAINS: Caused by forcing development, or chemically dirty dishes or hands, insufficient fixing, foreign chemicals. Remedy, do not allow chemicals other than those given in

formulas to come in contact with paper ; use fresh fixing bath ; keep prints in constant motion the entire 15 minutes they remain in fixing, and if due to forcing development give more time in printing.

ROUND, WHITE SPOTS : Caused by air bells which form on face of print when developer is first flowed on. Remedy, use more developer, break air bells with finger.

For further particulars, ask your dealer or write us for a copy of the "Velox Book."

Be Sure to Use Pure Chemicals.

To get the best negatives from your films—to get the best prints from your negatives—it is imperative that the chemicals which you use be absolutely pure.

For all our film and papers we furnish powders and solutions, mixed in just the proper proportions and compounded from the purest chemicals, rigidly tested in our own laboratories.

But we go even further than this. For those who prefer to mix their own solutions by formula, we have prepared a line of carefully tested standard photographic chemicals.

Don't mar good films and plates and good paper with inferior chemicals.

This seal stands for the highest purity. Be sure it's on the package before purchasing.

EASTMAN KODAK CO.,
Rochester, N. Y.

PART VI.

MOUNTING.

The most satisfactory method for mounting prints of any size is by the use of Kodak Dry Mounting Tissue, as by the use of this tissue the print lies perfectly flat in absolute contact even on the thinnest mount and absolutely without curl.

The tissue comes in flat sheets, dry, not sticky, and easy to handle, and the tissue being water proof protects the print from any impurities in the mount stock.

For multiple mounting and folders the tissue is ideal.

The process of mounting is as follows :

Lay the print on its face and tack to the back a piece of the tissue of the same size as the print by applying the point of a hot flatiron to small spots at opposite ends.

Turn the print face up and trim the print and tissue to the desired size. Place in proper position on mount and cover print with a piece of smooth paper and press the whole surface with a hot flatiron.

Press, don't rub.

The iron should be just hot enough to siss when touched with the wet finger. If the iron is too hot the tissue will stick to the mount and not to the print, if too cold the tissue will stick to the print and not to the mount.

Remedy : Lower or raise the temperature of the iron and apply again.

When mounting with paste, lay the wet print face down on a sheet of glass and squeegee-off all the surplus water, then brush over the back with thin starch paste, lay the print on the mount, then cover print with a clean piece of blotting paper and press into contact with a squeegee or rubber print roller.

EASTMAN KODAK COMPANY,
Rochester, N. Y.

PRICE LIST.

No. 3A Special Kodak, with Zeiss Kodak Anastigmat lens *f*.6.3 and Compound Shutter, for pictures 3¼ x 5½ (not loaded),	$65.00
Black Sole Leather Carrying Case, velvet lined, with strap,	3.00
Combination Back for Film or Double Plate Holders,	4.00
Double Glass Plate Holders, 3¼ x 5½, each,	1.00
N. C. Film Cartridge ; 10 exposures, 3¼ x 5½,	.70
Do., 6 exposures.	.40
Do., Double-Two Cartridge, 4 exposures.	.30
Standard Dry Plates, 3¼ x 5½, per doz ,	.65
Kodak Film Tank, 5¾ inch,	6.00
Duplicating Outfit for same,	2.50
Kodak Tank Developer Powders, for 5¾ inch Tank, per pkg. ½ doz.,	.26
Eastman Plate Tank, for 3¼ x 5½ plates, including Solution Cup, Plate Cage and Loading Block,	3.50
Eastman Plate Tank Developer Powders, 4 x 5, per package of one-half doz.,	.20
Kodak Acid Fixing Powder, per 1 pound package,	.25
Do., ½ pound package,	.15
Do., ¼ pound package,	.10
Eastman Eikonogen Developer Powders (for dark room development), per doz. pairs	.50
Do., per ½ dozen pairs,	.25
Eastman Hydrochinon Developer Powders (do not stain the fingers). per doz- pairs,	.50
Do., per ½ doz. pairs,	.25
Eastman Pyro Developer Powders (for dark room development), per doz. pairs,	.50

Do., per ½ doz. pairs,	$ .25
Eastman Hydrochinon, Eikonogen, Pyro and Special Developer Powders, in sealed glass tubes, per box of 5 tubes,	.25
Glass Stirring Rod Thermometer,	.60
Velox Paper, per doz., 3¼ x 5½,	.15
Nepera Solution (for developing Velox), 4 ounce bottle,	.20
Solio Paper, per pkg. 2 doz., 3¼ x 5½,	.25
Eastman Printing Masks, No. 8, for use with No. 3A Special Kodak Negatives, each,	.10
Combined Toning and Fixing Solution, for Solio, per 8 ounce bottle,	.50
Do., 4 ounce bottle (in mailing case, including postage, $ .50),	.30
Kodak Print Roller, Double, 6 inch,	.50
Eastman Reducer, per box of 5 tubes,	.25
Royal Re-developer, per pkg. 6 tubes,	.75
Eastman Flash Sheets, No. 1, per pkg. ½ doz.	.25
Do., No. 2, per pkg. ½ doz.,	.40
Do., No. 3, per pkg. ½ doz.,	.60
Eastman Flash Sheet Holder,	1.00
Kodak Portrait Attachment, for use with No. 3A Special Kodak,	.50
Kodak Color Screen, No. 5 Special, for use with No. 3A Special Kodak,	1.00
Kodak Dry Mounting Tissue, 3¼ x 5½, 2 doz. sheets,	.10
Eastman Film Developing Clips, 3½ inch, per pair, (nickeled),	.25
Kodak Film Clips (wooden), 5 inch, per pair,	.15
Kodak Metal Tripod, No. 1, four sections,	2.50
Do., No. 2, 5 sections,	3.25
Eastman Folding Head Tripod, maple,	3.50

Bulls-Eye Tripod,	$ 1.50
R. O. C. Tripod Truck, No. 1,	1.00
Do., No. 2,	1.25
Eastman Kodak Dark-Room Lamp, No. 2, ⅝ inch wick,	1.00
Eastman Indexed Negative Albums, to hold 100 3¼ x 5½ film negatives,	1.00
Kodak Trimming Board, No. 2, capacity 7 x 7 in.,	.60
Bevplane Mounts, 3¼ x 5½, per 100,	.90
Do., per 50,	.45
The DeLuxe Album, 7 x 10,	3.00
Developing, printing and mounting, on Velox, per roll of 10 exposures,	1.50
Do., unmounted, per roll of ten,	1.40
Developing only,	.80
Developing, printing and mounting, on Velox, per roll of 6 exposures,	.90
Do., unmounted,	.84
Developing only,	.50
Printing and mounting only, on Velox, each,	.10
Do., Velox unmounted,	.09

No orders executed for less than twenty-five cents.

11 x 14 Bromide Enlargement, mounted on card,	1.25
14 x 17 Bromide Enlargement, mounted on card,	1.50

On enlargement orders, if, in our opinion, the print will be improved by double mounting, we will do so at an additional charge of 10 cents, or triple mounted at 15 cents.

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Rochester, N. Y.

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