

The
Kodak
Manual.

For the 5 x 7 Folding Kodak.

Kodak.

Trademark, 1888.

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THE EASTMAN DRY PLATE AND FILM CO.,

Rochester, N. Y.

1880.

The
Kodak
Manual.

For No. 5 Folding Kodak.

EASTMAN KODAK COMPANY.

ROCHESTER, N. Y.

Oct. 1892.

THE KODAK MANUAL.

PART I. Directions for making the exposures.

PART II. Directions for reloading the Kodak.

PART III. Directions for making the negatives.

PART IV. Directions for making the positives.

Part I.

MAKING THE
EXPOSURES.

CONTENTS.

First. Concerning the Kodak when received by the purchaser, and what should be done before using it.

Second. How to make Instantaneous Exposures in the Open Air when the Sun is Very Bright.

Third. How to make Cap Exposures in the House, and Outside when the light is weak

Fourth. How to make Flash light pictures at night.

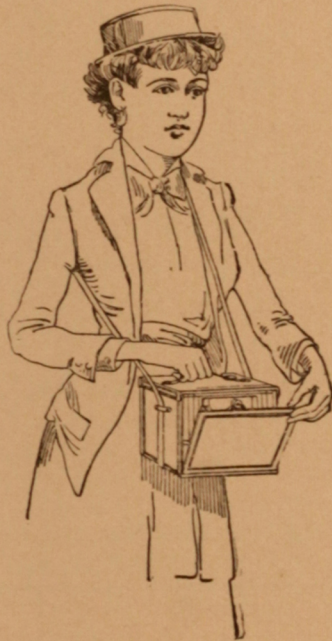
Fifth. General information.—Returning the Kodak to the factory for reloading.

FIRST.

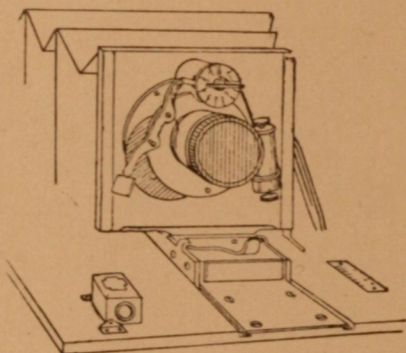
EVERY KODAK is tested and loaded before it leaves the factory and is known to be in working condition. That the purchaser may be assured of this fact it is tied with wire and sealed.

 *Read these Directions before cutting the wire,*

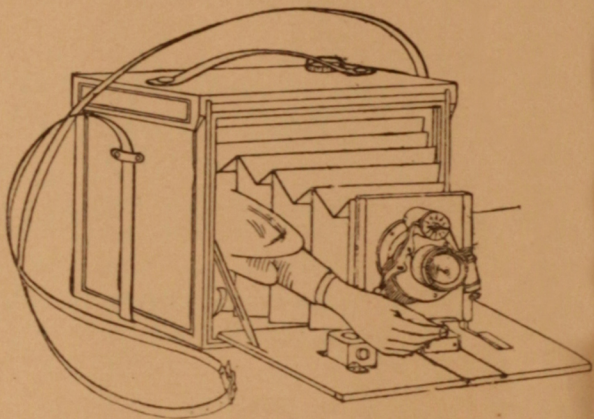
1. Open the front of the Kodak by pressing on the button as shown in the cut. Throw the front down until it locks in position.



2. Remove the Cap which has thus far concealed the lens; this Cap should be saved for time exposures.



3. Pull out the front carrying the lens, using the lever to lock and unlock it.



4. See that the largest hole of the stops is in the lens.
See pages 19 and 20.

NOTE.—The stops are shifted by placing the finger on the milled edge of the circular disc, when setting the stops always see that the one to be used is brought to the center of the lens where it catches.

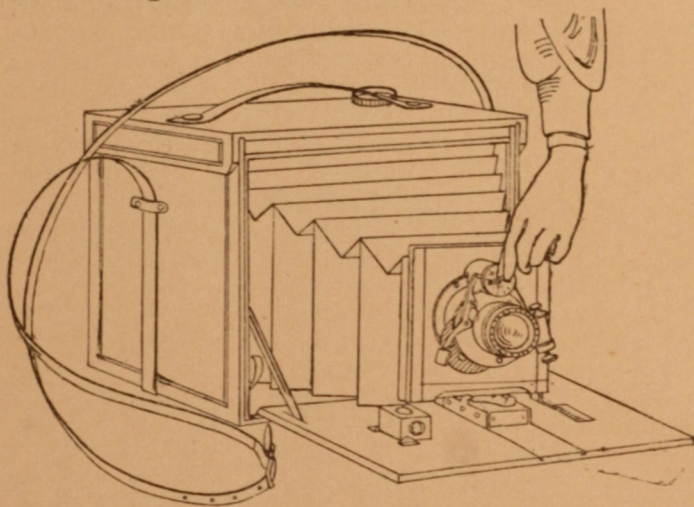
1. To Set the Shutter.

Turn the key in the direction of the arrows as far as it will go.

2. To Time the Shutter.

After setting the Shutter as above, turn the key back until the pointer rests opposite the figure denoting the time required.

3. To Expose. Press the lever.



SETTING THE SHUTTER.

For instantaneous Exposures time the Shutter at 1-50. For time exposures time it at T. Press the lever a second time to close the shutter on time exposure. The shutter must be set first and timed afterward or it will not open.

 **Use the largest stop.**

If it becomes necessary to correct the timing of the shutter, it can be done by moving the valve at bottom of cylinder, when the shutter times correct at the 5 second mark, all the other divisions will be found correct.

The Kodak is now ready for use.

A memorandum book accompanies the Kodak, so arranged that full particulars may be noted concerning each Exposure, such as date, hour, subject, and if interior, light and time of exposure, and other incidents of interest. Or, if desired, there may be simply a checking off. If kept in either manner the number of Exposures remaining may be known at any time and without trouble of trying to remember.

 *Use the largest stop.*

SECOND.

HOW to make exposures with the Kodak in the Open Air when the Sun is Very Bright.

1. Release the front carrying the lens by pushing the curved handle to the right. *Set the Focus* by pulling out the front of the camera until the figures in the index plate nearest the estimated distance in feet of the *principal object* appear opposite the pointer, then fasten the front by pressing the lever to the left.



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



Use the largest stop.

focus should be moved accordingly, The dial is divided for 5, 6, 8, 10, 12, 15, 20, 25, 50, 100 ft. Everything beyond 100 feet is in the 100 ft. focus. Nothing nearer than 5 feet can be focussed.



POSITION FOR MAKING VERTICAL PICTURES (SEE PAGE 17.)

2. *Hold it Firmly* with both hands.
3. *Hold it Steady.* In order to do this let it rest against the body, the right hand being extended to support the front with the finger on the lever as shown above.

10

 *Use the largest stop.*

Though the time needed for an Exposure is only a fraction of a second, the pressing of the lever requires enough force, that, unless the Kodak is held steady the picture will be blurred.

The Principal Thing

To learn in using the Kodak is to

Hold it steady

while pressing the lever. To do this requires a little practice, and the user will do well to try it a few times with *the cap on the lens*, going through all the motions of taking a picture *except turning* the key. Thus (cap in place)

1. Press lever.
2. Set shutter.

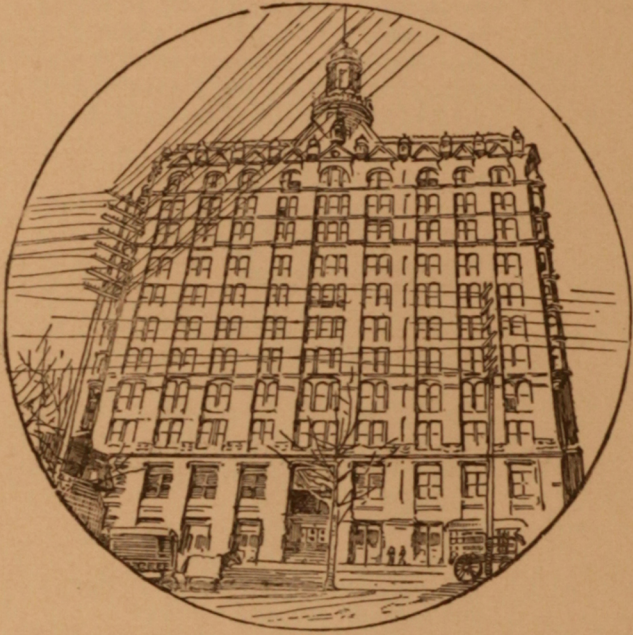
Repeat several times, then take off the cap and proceed.

4. *Hold it Level.*—The Kodak must be held level.

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 this :



Use the largest stop.



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

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

 *Use the largest stop.*

- e. The object must be away from all shade, whether it be that of trees, veranda or anything else. The full bright sun must shine (unobstructed) upon the side which it is desired to photograph. If the atmosphere is smoky the picture will be dull and flat.
- f. The sun must never shine on the front of the Kodak while the picture is being taken.
- g. By looking at the image in the finder the exact scope of the picture may be seen at a glance.

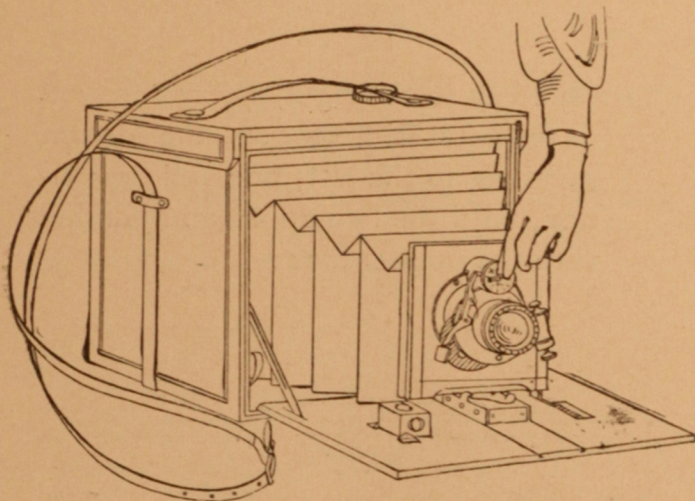


6. *Press the Lever.*

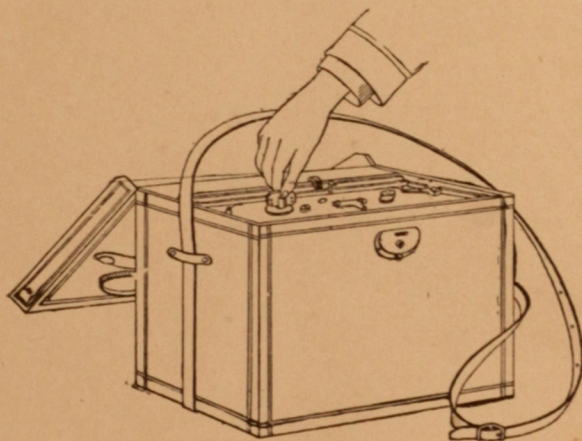
To do this without swaying the camera to one side, grasp the Kodak as shown in the cut, with the first finger on the lever, and press up gently and firmly until the shutter snaps. Any swaying of the camera will blur the image.

The first Exposure has now been made.

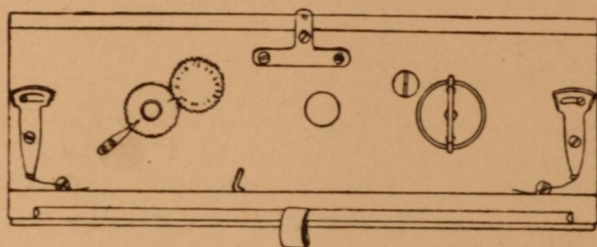
7. *Set the Shutter, see page 8.*



8. *Turn the Key so as to make one complete revolution of the counter. This will bring a new section of the film before the lens.*



Turn the key to the right, (if you turn it to the left it will come out, the counter revolves to the left) one full revolution, until the two dots stand parallel with the pointer thus :



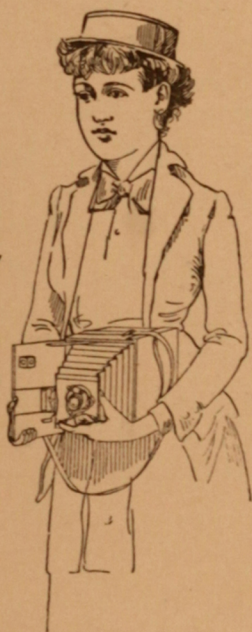
*The Kodak is now ready for the next
Exposure.*

If it is intended to make a note of this Exposure, or other incidents concerning it, do it at once and so keep a record of it.

It will be wise to make this order of procedure a *Habit*, for then the Kodak will be ready for any view that may be presented. You will not need to try to remember whether you "Turned the Key"—let the "Turn the Key" be the last act of the exposure "gone before."

Notice this.

The position for holding the Kodak, shown on page 10, is for making *horizontal* pictures; if a vertical picture is wanted the Kodak should be held on its side thus :



For the majority of pictures the horizontal position will be found the most appropriate, but for high, narrow buildings, full length single figures and similar subjects, the vertical position will be found preferable. The finder on the front of the camera will enable the user to determine which is the best position for any given subject.

The Kodak cannot be used for *instantaneous* exposures in the open air (out-of-doors) unless the Sun is Very Bright.

For instantaneous exposures time the shutter at $\frac{1}{50}$. See page 7.

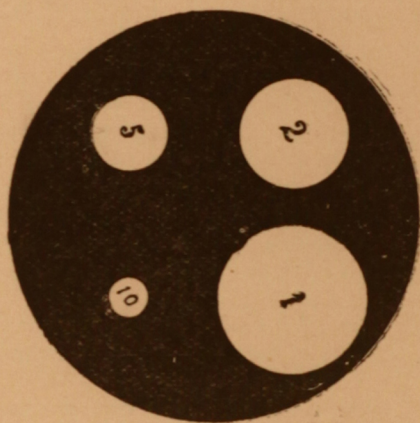
The Stops.—On opening the front of the camera a circular disc may be seen close in front of the shutter, which has four holes of different sizes. This disc can be shifted so as to bring either hole

in the center of the lens. These holes admit light to the lens in the proportion of 1, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{10}$, and they should be used as follows :

1. *The largest*—For all ordinary instantaneous exposures when the sun shines.
2. *The Second*—For instantaneous exposures when the sun-light 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 interiors (time exposures, the time of exposure required is given in the table on page 25).
5. *The Third*—For interiors, (see page 25).
Never for instantaneous exposures.
10. *The Smallest*—For cap exposures outdoors in cloudy weather. *Never for instantaneous exposures.* The time required for cap exposures on cloudy days with smallest stop will range from $\frac{1}{2}$ second to 5 seconds, according to the light. See page 26.

When setting the stops always see that the one to be used is *brought to the center of the lens* where it catches.

In setting the stops bring the figure denoting the size of stop opposite the white mark on the edge of the shutter.



THIRD.

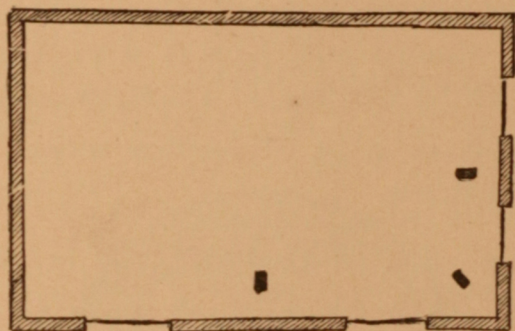
HOW to make Exposures within the House.

1. Put on the cap and set the shutter at T. See page 7.
2. Set the stop as directed on page 20.

The Kodak is now ready for Interiors.

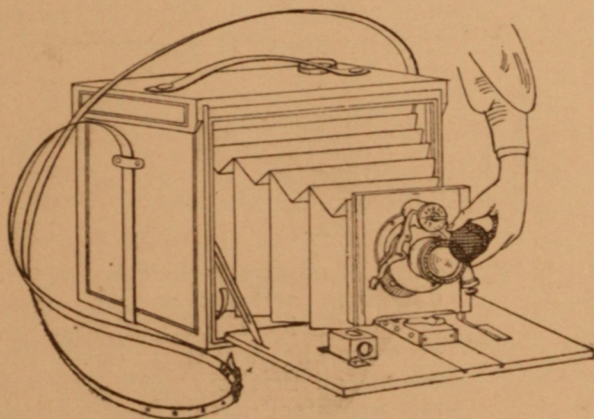
But as more time is necessary than when working out-of-doors (in the broad, open sun-light) the following directions must be adhered to in order to get satisfactory results.

3. Place the Kodak on some steady support—a mantel, table, buffet, etc. (A regular tripod may be used if preferred. See price list.)
4. Place the Kodak in the corner of the room, if a general view of the room is wanted.



This is a diagram of a room having windows on two sides, showing positions where the Kodak may be placed with propriety.

5. Do not point it toward an uncurtained window. Where there are windows within range, draw the curtains or close the blinds so as to allow light to enter only at your back ; don't let it come in in front of the Kodak.
6. There must be no sunshine within range of the Kodak.



7. Detach the cap, holding the Kodak steady with the other hand; hold the cap an instant in front of the lens and remove the other hand; then when all is steady take away the cap.

Do not rest the hand on the Kodak during the exposure.

8. Time the Exposure by a watch.
9. Replace the cap.

At the same time that *one* hand replaces the cap the *other* hand should be placed on the Kodak that the cap may be inserted quickly and securely.

10. Turn the Key.

11. Make a memorandum of everything concerning the exposure ;

surroundings,
light,
time,
etc., etc.

If a strict observance be paid to these directions, and the operator makes note of the incidents concerning each exposure, he will learn with little trouble all that is requisite to make this important part of the finest photographs.

The Kodak is now ready for the next Interior Exposure.

12. Follow the directions given heretofore for each successive exposure.
13. When the last Interior Exposure is made, press the lever and set the shutter for instantaneous exposures as before directed.

TIME NEEDED FOR INTERIOR EXPOSURES.

The following table gives the time of exposure required under varying conditions of light with the *second largest stop* (No. 2) in the lens. If the largest stop (No. 1) is used give only one-half the time, if the smallest stop (No. 10) is used give 5 times the time of the table. The smaller the stop the sharper the picture. The second largest stop gives the best 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.

} parlor.
2nd stop

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 to three hours before sunset.

If earlier or later, the time required will
be longer.

TIME EXPOSURES IN THE OPEN AIR.

When the *smallest stop* is in the lens the
light admitted is so much reduced that

exposures out of doors may be made with the shutter the same as interiors but the exposure must be much shorter.

With Sunshine— $\frac{1}{8}$ Second.

With Light Clouds—From $\frac{1}{2}$ to 1 second will be sufficient.

With Heavy Clouds—From 2 to 5 seconds will be required.

The above is calculated for the same hours as mentioned on page 26 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.

FOURTH.

HOW TO MAKE KODAK PICTURES AT NIGHT

WITH THE

FLASH LIGHT APPARATUS.

The recent invention of the flash light apparatus renders easy the taking with such a camera as the Kodak, photographs at night.

The requisites are

The Kodak Camera.	
The Flash Light Apparatus, -	\$1.50
One package Flash Powders, -	.60
	\$2.10

The flash light apparatus consists of a specially constructed alcohol lamp, having in front of it a little tray upon which is poured about a teaspoonful of flash light powder. A rubber tube attached to a blow-pipe in the flame of the lamp, conveys a blast of air from a bulb held in the hand

and serves to project the flame of the lamp upon the powder, when it is desired to take a picture. As soon as the flame touches the powder it flashes up an intense white light, sufficiently strong to make a picture instantaneously.

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

Pictures are taken so quickly that groups of people around a dinner table or card table can be taken as clear and sharp as if they were in the open sunlight. This enables the photographer to obtain souvenirs of many occasions which have hitherto been quite beyond the range of the art.

Photographing a Room.—The camera should be prepared for cap exposure by setting the shutter open and putting on the cap, as directed on pages 19 and 20 of this Manual, and placing it on some level support where it will take in the view of the room desired.

Preparations of the Flash Light.—The light should *always* be placed two feet behind and two to three feet to one side of the Kodak. If placed in front or on a line with front of the camera, 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 lamp should be at the same height, or a little higher than the camera. The support upon which the lamp is placed should not project far enough in front of it to cast a shadow in front of the camera. A piece of card board a foot square placed under the lamp will prevent any sparks from the flash doing any damage. A sheet of white card-board set up behind the flash lamp will act as a reflector and increase the strength of the picture.

TAKING THE PICTURE.

Having the Kodak and lamp both in position, light the lamp and press the bulb to make sure that the flame can be driven to the center of the tray. Then lay the bulb down (to prevent accident) and pour upon the tray in front of the flame the contents of one of the capsules of

powder that accompany the lamp ; then uncap the camera, stand at arm's length and press the bulb. There will be a bright flash which will instantly impress the picture on the sensitive film. Then cap the camera and turn a fresh film into place with the key ready for another picture.

NOTE.—The amount of powder 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 more than one capsule is to be used, all the powder should be poured in one pile on the tray.

TABLE.

- For 10 *feet distance* and
light walls and hangings, use 1 capsule.
- For 10 *feet distance* and
dark walls and hangings, use 2 capsules.
- For 15 *feet distance* and
light walls and hangings, use 2 capsules.
- For 15 *feet distance* and
dark walls and hangings, use 3 capsules.
- For 25 *feet distance* and
light walls and hangings, use 3 capsules.
- For 25 *feet distance* and
dark walls and hangings, use 4 capsules.

The above is calculated for the largest stop in the lens.

To make a Portrait.—Place the sitter in a chair partly facing the camera (which should be at the height of an ordinary table), and turn the face slightly toward the camera. The proper distance from the camera to the subject can be ascertained by looking at the image in the *finder*.

The lamp should be on the side of the camera away from the face, that is the sitter should not face the lamp. The lamp should be placed higher than the head of the sitter.

To make a Group.—Arrange the chairs in the form of an arc, facing the camera, so that each chair will be exactly the same distance from the camera. Half of 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 may 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 *finders* on the camera will aid the operator to compose 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 lamp light, which may be left on while the picture is being made, provided none of lights are placed so that they show in the finder.

FIFTH.

WHEN the exposures have all been made the key will refuse to turn.

The Kodak is then ready to return to the Eastman Kodak Company to be reloaded and have the negatives developed and the photographs (positives) printed.

NOTE —It is taken for granted here that the reader is a novice and does not desire to pursue the art except just so far as absolutely required to make the exposures. If, however, he desires, he can finish his own pictures by following the directions given in Parts 3 and 4 of this Manual. The difficulties being no greater than those of the ordinary dry plate process, and the labor much less.

If it is not convenient to return the camera the Reel of Exposed Film can be taken out and sent by mail to the factory. For directions see part 2.

PACKING THE KODAK.

Put on the cap and *tie a string* around the Kodak ; then, having provided a box large enough to contain it, with plenty of soft packing, enclose the Kodak, put on the cover, and finally, wrap in one thickness of stout manilla paper and tie with a stout cord.

Address as follows :

Eastman Kodak Company,

Rochester N. Y.

From

(Put your own name and
address here.)

Always put your name on the wrapper.

Prepay the charges, and don't put any
more or any less writing on the wrapper.
Then write us a letter as follows :

*To Eastman Kodak Company, Rochester,
N. Y.*

GENTLEMEN :—I send you to-day by
express, *prepaid*, my No. 5 folding Kodak
Camera to be reloaded and the pictures
finished. Enclosed please find \$10.00* in

express order.

postal "

postal note.

bank draft.

bills, (if bills, letter must be registered), to pay for same.

Yours truly,

..... Name.

..... Post Office.

..... County.

..... State.

*This is the Price for 32 exposures only.

On receipt, we will reload the camera and return it at once ; the finished pictures will follow in ten days or less.

If the Kodak refuses to work or gets out of order, return it to EASTMAN KODAK COMPANY; it will be repaired free of charge unless badly damaged by accident or carelessness.

It must be perfect.

If you have any difficulty with the Kodak write us. Every Kodak is perfect when it leaves our factory, and it is to our interest to see that it reaches the user in the same condition, and that he is provided with every assistance to work it properly.

EASTMAN KODAK COMPANY,
Rochester, N. Y.

Part 2.

REFILLING THE
KODAK.

A GREAT FEATURE of the *Kodak System* is the division of labor whereby the user of the Kodak is relieved of the necessity of using a dark room and from all work connected with the taking of pictures, except merely making the exposure.

To carry out this system to its fullest extent, the owner especially if he be a novice, will naturally prefer to return the Kodak to the factory to have it refilled.

There are instances, however, where this will be impracticable, owing to distance, or a desire to expose more than one roll of film on a trip, without waiting to send to the factory and back. In such cases it will be desirable for the owner to know how to refill his own Kodak, then he can keep a supply of extra spools and send the rolls of exposures to the factory whenever convenient.

TO REFILL THE KODAK.

Provide

- a.* An extra Spool of Kodak Film.
- b.* An extra Reel, (5 inch model of '87).*
- c.* An Eastman Orange-Candle Lamp.
- d.* A dark room having a shelf or table.

*NOTE: The extra reel does not accompany the spool, unless ordered. While not an actual necessity, it is a convenience and saves unwinding the exposed film from the old reel, and the consequent liability of fogging the film by exposure to white light. The exposures should be sent to the factory on the first reel. The reel will be returned with the prints and can be used repeatedly. Hence it is necessary to have only as many extra reels as it is desired to send spools at one time to the factory for development.

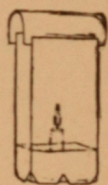
By a dark room is meant one that is wholly dark—not a ray of light in it. Such a room can easily be secured at night almost anywhere. The reason a dark room is required is that the film is extremely sensitive to white light, either daylight or lamplight, *and would be spoiled if exposed to it* even for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

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 Orange Candle lamp, and light it as directed in the circular which comes in the box in which the lamp is enclosed.

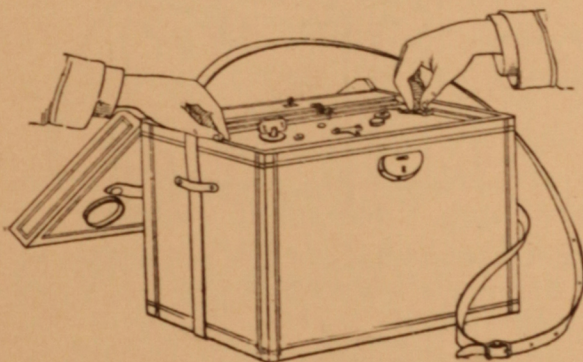
The lamp gives a subdued yellow or orange light which will not injure the film unless it is held close to it.

Set the lamp on the table at least eighteen inches from and with the *side* toward the operator.

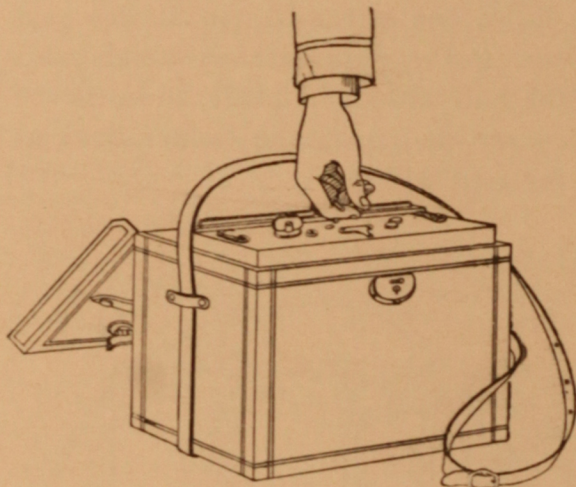


THE LAMP.

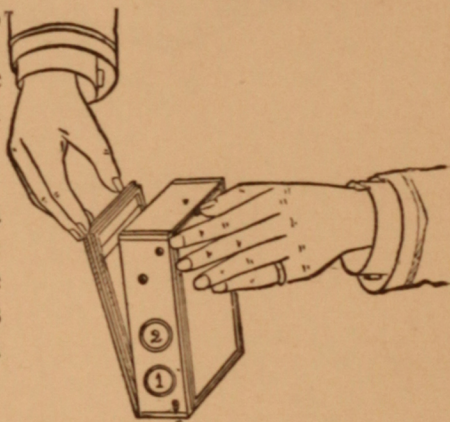
1. Raise the cover of the Kodak and spring the side catches which hold the roll holder in place, towards the center and push the holder back as far as it will go.



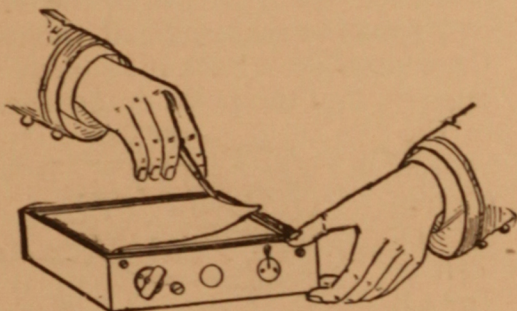
2. Take hold of the hook and lift the *roll holder* from the case.



3. Release the back of the roll holder by sliding the lever which projects inside one end, and remove the back thus:



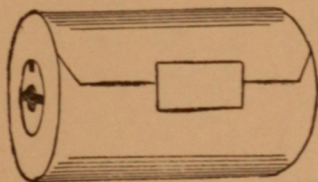
4. With a penknife sever the film as shown below.



5. Unscrew center No. 1 and then the key; this will release the roll upon which is wound the exposed film.
6. Take the free spool of film out of its box, unroll the black paper that is wound about it and wrap it around the reel of exposures and put the latter in the box and put on the cover.

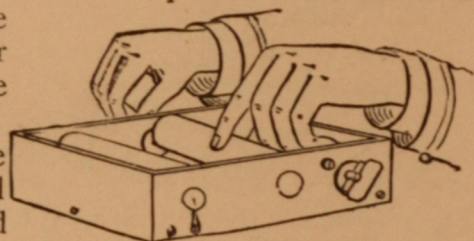
This box is then ready to be tied up and mailed to the Eastman Kodak Company. For shipping directions see page 35, Part I.

7. Unscrew center No. 2 and remove the empty spool (which may be thrown away). The roll holder is then ready for the insertion of a fresh spool. This is the spool as taken from its wrapper.



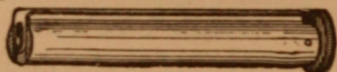
8. Insert the spool by fitting the slotted end upon the tension head, then screw the center No. 2 back into place, making sure that the point enters the hole in the center of the spool.

The
spool
should

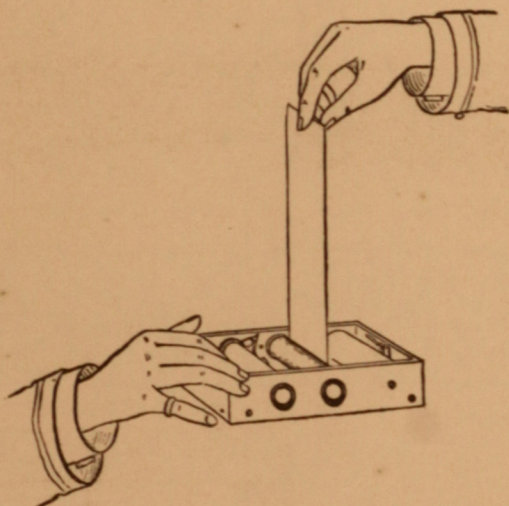


be set into place as shown in the cut.

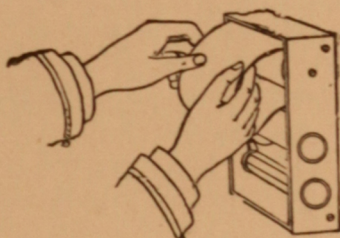
9. Put the new reel in its place and screw in the key ; then screw in center No. 1. This is the reel.



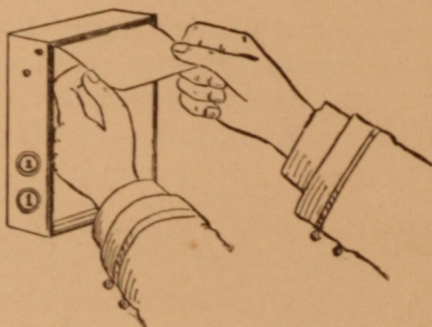
10. Remove the paper band which prevents the film from unwinding, and pull out the end 11 inches, thus :



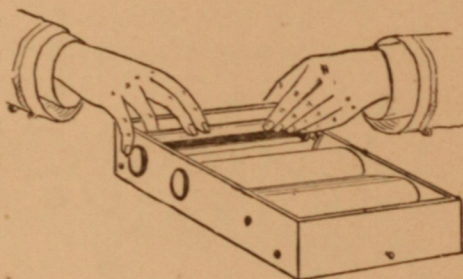
11. Thread the film through the opening over the first guide roll, as shown here.



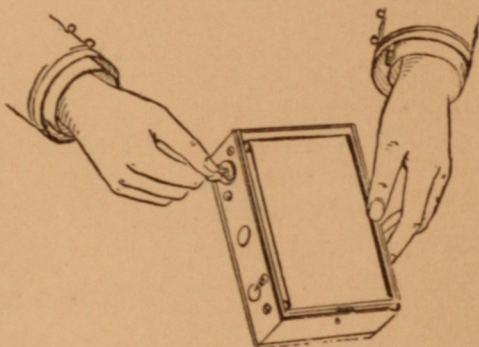
12. Pull the film through and thread it over the second guide roll.



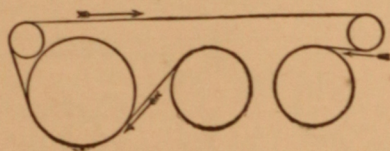
13. Raise the clamp of the reel and thread the end under it from behind, like this :



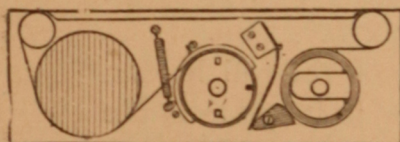
Shut the clamp down and give the reel a partial turn backward with the key.



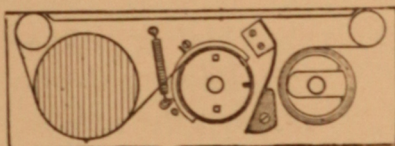
The film should then be in this position :



Now examine the band of film and see that it is true on all the rollers, *i. e.*, that there is an equal space at each side between the edge of the film and the side of the roll holder. Also see that the coils of film have not been



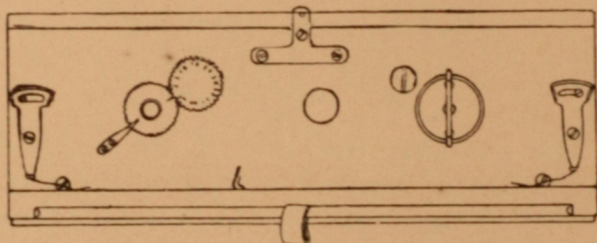
PAWL ON.



PAWL OFF.

allowed to slide edgewise on the spool. If it is not perfectly true, throw off with the point of a knife the pawl which keeps the reel from turning back, (twist the key while doing this, to help loosen the pawl), and thus having loosened the film, slide it edgewise with the flat blade of the knife until it is perfectly true, then throw on the pawl and turn the key until the film is tight. *Do not forget to throw on the pawl.*

14. Turn the key until the counter stands thus :



15. Lift the counter wheel and turn it until it marks zero.
16. Wipe the lens with a soft handkerchief or piece of chamois skin.
17. Replace the back of the roll holder.
18. Set the roll holder in its place in the Kodak, and fasten it by pressing the side levers into place.

The Kodak is then ready for work.

*How to Remove the Exposed Film when
only a portion of the Exposures
have been made.*

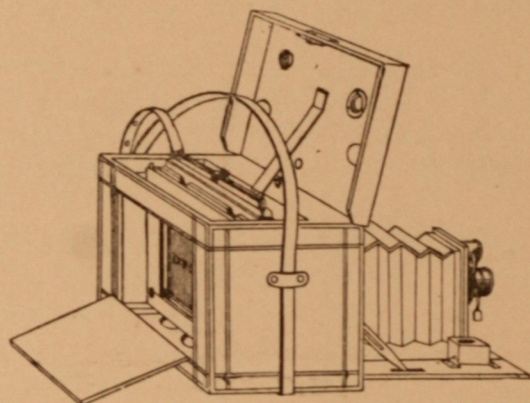
It is not necessary to make the entire 48 pictures before taking out and developing the exposures that have been made.

When any number of exposures have been made they can be removed and the remainder of the film attached again for further exposures, as follows :

1. Cut the film as shown on page 44, then throw back the pawl as shown on page 48. Pull the exposed film off from the reel and wind it on the finger and wrap it up in black paper.
2. Take hold of the end of the unexposed film remaining on the spool and draw it out as shown on page 46, attaching it to the reel as if it were a fresh spool.

The Kodak will then be ready again.

Glass Plate Attachment for the Folding Kodak which is interchangeable with the roll holder, thus permitting either glass plates or roll film to be used.



The cut shows the adapter and plate holder on the camera, remove the roll holder and slide the adapter in grooves in place of roll holder, then place the plate holder in front of adapter springing back the ground glass which holds it in place, remove the slide before making the exposures. Focus the camera the same as for films, see page 8, or can be focused with the ground glass, the back of case being made to open to allow the image to be focused on the ground glass.

Part 3.
DEVELOPING
KODAK
NEGATIVES.

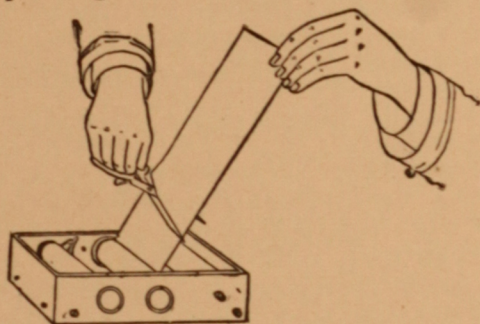
DEVELOPING.

THE strip of flexible material upon which Kodak pictures are taken, is called the *sensitive film*. The film as it passes over the measuring roll in the roll-holder is perforated by an automatic device to mark the division between the pictures; each section is called an "*exposure*." When the exposed film is removed from the camera, as described in the preceding chapter, the image is invisible or latent, and has to be brought out by chemicals, which blacken that part of the film upon which the light has acted. This is called development. When the exposure has been developed, it is called the *negative*, because the lights and shades of the original are reversed. Shadows in the negative appear transparent, and lights are opaque. The finished negative is used to print on sensitive paper, as will be described in Part 4, and thus the *positive* or final picture is made.

If, instead of sending the spool of exposed film to the Eastman Kodak Company to be developed and printed, the Kodaker wishes to develop and print his own negatives, he can easily learn to do so by following carefully the directions given.

COMMENCING from that point in the preceding chapter, where the exposed film is being removed from the camera, we will proceed.

Separating the Exposures.—Instead of removing the reel with the exposures wound on it, bodily from the roll-holder, as described in Part 2, throw back the pawl so as to allow the film to unwind, and pulling out the film as here shown,



cut off the film at every perforation. Put the sections in a covered (light tight) box until taken out for development.

The Developing Outfit.—The following is a list of the articles necessary to develop and finish 32, 5x7 Kodak negatives.

(Implements and materials for printing the positives are not included in this list. A list of those articles will be found in the next chapter.)

DEVELOPING OUTFIT.

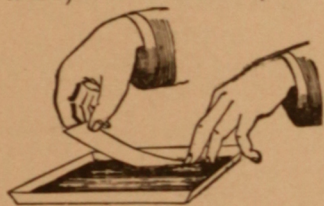
(See Price List.)

1	Eastman Orange Candle Lamp.....	\$	25
3	5x8 hard rubber trays.....	I	68
1	camel's hair brush.....		10
1	four ounce graduate.....		35
1	minim graduate.....		25
1	package developer powders.....		50
1	ounce bottle bromide potassium.....		15
1	pound hyposulphite soda.....		10
1	pound powdered alum.....		10
1	bottle soaking solution.....		35
1	bottle intensifier.....		35
1	glass rod.....		10

\$4 28

Also, provide a pail of clear, cold water, a dipper, and a pail for slops.

Soaking the Exposures.—Take say six or eight of the sections of exposed film and put them in one of the trays filled with water. Put them in one at a time, end-wise, face down, as shown in this cut,



so as to avoid air-bells. Take particular care in laying them into the water not to allow the sharp corners of one strip to injure the surface of another. While they are soaking prepare

The Developer.—Take one of the packets of developer and empty the two powders into the graduate. Fill the graduate up to the mark, 4 oz., with water, and dissolve by stirring with the glass rod.

In case the operator desires to make his own solutions, we give the

Formula for the Developer :

Pyrogallic acid, 10 grains.

Carbonate soda, 75 grains.

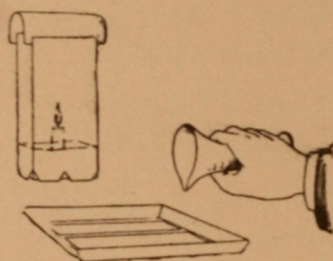
Sulphite soda crystals, 110 grains.

Water, 4 ounces.

NOTE—4 ounces of developer will develop about 8 exposures, if they are developed one after the other in quick succession. Then the developer should be thrown away and a fresh portion mixed.

To Develop.—Take one of the soaked exposures and lay it in one of the empty trays, face up. (The face can be distinguished by the touch, the back being the polished side.) Always handle the exposures by the corners; if the finger touches the center where the image is, it will leave a mark.

Having one exposure in the tray, pour the developer from the graduate on to it.



Then take the camel's-hair brush, and having first moistened it in clean water, carefully brush over the face of the film to take off any adhering air bells. Rock the tray gently to equalize the action of the developer. The image will appear faintly in about thirty seconds, the sky will appear first and will continue to grow blacker as the development proceeds. In a few seconds more the outlines of the entire image

will show. The development should be continued (in case of instantaneous exposures) until all action ceases, then the negatives should be rinsed in clean water, then put in the alum bath, see page 57.

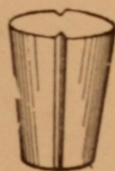
The time of development of an instantaneous exposure will be about ten minutes. If, in making interior exposures, too much time has been given, the image will darken more quickly and evenly, the shadows almost as quickly as the lightest parts. If the development is allowed to continue, the detail will be lost. In such cases the remedy is in

The Restrainer.—

Bromide Potassium, 1 oz.

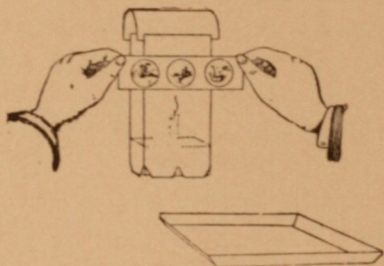
Water, 8 oz.

Dissolve the bromide in the water, and keep it in a dropping bottle, consisting of an ordinary bottle having in the cork two notches cut lengthwise on opposite sides.



A few drops of the above dropped into the tray of developer, and mixed by rocking it will restrain the development, cause the image to blacken more slowly in the

shadows, and act generally as a neutralizer of the light which has been allowed to act too long on the film. Ten to twenty drops of the restrainer, in four ounces of developer will usually be sufficient. The development must be continued until the image has attained proper density. This can only be determined by the experience of the operator, who will have to be guided somewhat by the appearance of the sample negative supplied with the outfit. A few trials of different density will give a criterion to go by. For this reason we recommend the novice to develop not more than six or eight exposures to start with, and to carry them through the entire course of operations to the final printing of the positives before undertaking the balance of the exposures. The progress of the development can be examined by looking through the film as shown in this sketch.

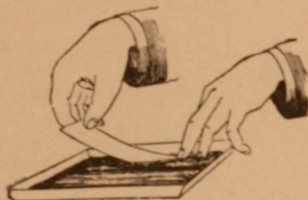


When fully developed rinse slightly in clear water, transfer to a tray containing a saturated solution of common alum in water. This solution is made by putting 1 pound of alum in a vessel, such as a quart fruit jar, and filling the jar with water; shake thoroughly and allow to settle. Then pour enough of the clear liquid into the tray to half fill it. The jar can be filled up with water as long as any alum remains undissolved. The solution in the tray is to be thrown away when through developing. Leave the negative in the alum bath one or two minutes, then rinse with clear water and immerse in

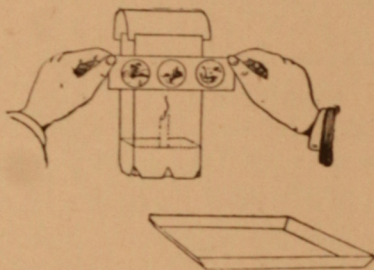
The Fixing Bath.

Hyposulphite soda, 4 ounces.
Water, 1 pint.

Fill a tray half full of this solution and then transfer the negatives one by one from the water to it, sliding them in edgewise, as in sketch, face down.



The function of the fixing bath is to dissolve away all that part of the silver where the light of the image has not penetrated, leaving the negative film clear in those portions, and opaque where the developer has blackened the silver. The negatives should lie in the fixing bath about ten minutes or until when examined, as here shown,



no uneven, milky blotches, remain on the film.

All the sensitive silver having been dissolved out of the film, it is no longer sensitive to white light, hence the orange shade may be removed from the candle at this stage, and subsequent operations carried on by a bright light.

As soon as the films are fixed, the fixing solution should be thrown out and the tray filled with pure water, after ten minutes the negatives should be transferred one by one

to a second tray of fresh water and then changed back and forth (into fresh water each time) every ten minutes at least six times.

If a mistake has been made in developing and the negative does not appear strong enough (this can be judged only by experience), the negative can be improved by

Intensification.—Lay the film in one of the empty rubber trays and pour over it the intensifier; allow it to act until the film is all of one even color and then pour the intensifier back into the bottle and wash the film in four or five changes of water for fifteen minutes

NOTE: This operation will not usually be required as the novice will soon learn to get the proper intensity in the development.

The films will then be ready for the soaking solution, the object of which is to prevent the films from curling while drying.

In case the operator desires to make his own solution he can use the following

Formula for Soaking Solution:

Glycerine, $\frac{1}{2}$ ounce.
Water, 16 ounces.



NOTE.—If more glycerine is used than given in the formula the negatives will not thoroughly dry and will be liable to get stained by the silver paper in printing.

Soak the films in this solution *five* minutes. The negative is then ready to dry. To dry them pin by the corners on a flat board, first taking care to remove all drops of water with a tuft of cotton or soft cloth. *Use no heat in drying.*

When dry rub off the back with a soft cloth.

When finished as above, the negative is ready for printing the positive. Each negative will serve for printing an indefinite number of duplicate positives. The methods for making which are fully described in Part 4 of this manual.

 Trays used for developing, fixing or intensifying must always be washed clean before being used again.

Finished negatives should be kept under pressure in a printing frame when not in use.

CONTENTS.

Making prints on Ferro-prussiate Paper
(blue prints).

Making prints on Solio Paper (silver
prints).

Part 4.
MAKING THE
POSITIVE.

PRINTING ON

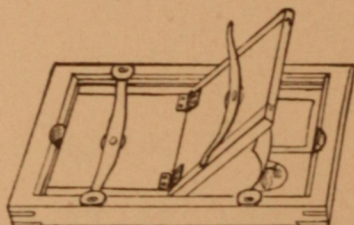
FERRO-PRUSSATE PAPER.

Ferro-prussiate paper affords the easiest way of making proofs from Kodak negatives, no chemicals being required. The operation being simply to lay a piece of the prepared paper behind the negative, in the sun, until it is darkened sufficiently, and then wash the print for a few minutes in clean water. The resulting picture is of a very agreeable, bright blue color on a white ground, and is as permanent as the paper itself.

REQUISITES.

1	Printing frame, 5 x 7,	- - -	\$0.50
1	Sheet of clear-glass, 5 x 7	- - -	.05
1	Package of Ferro-prussiate Paper,	-	.55
	(For twenty-four pictures).		
			\$1.10

Method of Printing :



Lay the negative (if Transparent film dull side up, if Stripping film bright side up) face up on the clean glass in the printing frame. A piece of the Sensitive Paper should then be laid face down (the face is olive green) on the negative. The hinged back of the printing frame is then to be carefully laid in position and clamped by the springs. The operation of putting on the Sensitive Paper must be performed in a subdued light, that is to say, in an ordinary room, as far as possible from any window. The paper not used must be kept covered in its envelope.

The printing frame, when filled as directed is to be laid glass side up in the strongest light possible (sunlight preferred) until the light, passing through the negative into the Sensitive Paper, has impressed the image sufficiently upon it. The progress of the printing can be examined from time to time by removing the frame from

the strong light, and opening one-half of the hinged back, keeping the other half fastened to hold the paper from shifting.

The printing should be continued until the shadows commence to bronze—a condition which will be readily observed after a few trials.

When the print is done, unfasten the back of the frame and take it out, and immerse it in a bowl of clean water. Change the water every five minutes for half an hour, and then let it soak for half an hour more in fresh water, and dry it between blotters. If the prints curl when dry they can be straightened by the scraping action of a paper-knife applied to the back.

If the prints are too light when washed, it will be evident that the printing was stopped too soon; and if too dark, *vice versa*.

The image, before the picture is washed, is quite indistinct, and two or three trials will be required to enable the novice to judge how far to carry the prints; but when learned with one negative it will be simple with all.

It is recommended to the novice who desires to learn photography by easy stages, that at first he have his Kodak negatives

developed and printed at the factory. Then when his first negatives are returned to him, he can try to make blue prints from them. After succeeding with them he can try silver printing, and after mastering that process he can try developing his own negatives. If the novice commences by trying to develop his own negatives, he is undertaking a good deal to begin with, and is liable to become discouraged by failures which may occur in any one of the successive stages of developing, printing, toning and mounting.

PRINTING ON EASTMAN'S SOLIO PAPER.

Silver printing is the method of making prints such as are commonly known as "photographs." They have a warm, brown tone, and are usually mounted on cardboard and highly burnished.

The method of making silver prints differs from that of making blue prints principally in the operation of toning, which operation will be hereafter described.

The requisites for making 32 No. 4 Kodak silver prints are as follows :

KODAK PRINTING OUTFIT.

(See Price List.)

1 5 x 7 printing frame,	-	-	-	\$.50
1 clean glass, for frame,	•	-	-	05
*3 5 x 8 hard rubber trays,	-	-	-	1.68
*1 4-oz. graduate,	-	-	-	.35
32 mounts, gold bevel edge,	-	-	-	.80
32 sheets Solio paper,	-	-	-	1 05
1 flat paste brush,	-	-	-	.10
1 bottle toning solution,	-	-	-	.50
				\$5.03

*Duplicates which are not required if operator has developing outfit, page 54.

The sensitized Solio paper having been printed under the negative in precisely the same way as directed for Ferro-prussiate paper, allowing the print to get a little darker tint than the finished print should be. Place prints without previous washing into the following combined toning and fixing bath :

2 oz. Eastman's Solio Toning Solution
4 " Water.

Pour the toning solution into one of the trays and immerse the prints one after the other in the toning bath ; five or six prints can be toned together if they are kept in motion and not allowed to lay in contact. Turn the prints all face down and then face up and repeat this all the while they are toning. The prints will begin to change color almost immediately from reddish brown to reddish yellow, then brown to purple. The change will be gradual from one shade to another and the toning should be stopped when the print gets to the shade desired.

Six ounces of toning solution will tone fifteen prints ; after that a new solution should be made same as before.

In large establishments the old toning baths are always saved and the gold recovered but the amatuer deals with too small quantities to render this advisable.

When the proper shade has been attained in the toning bath the prints should be transferred for five minutes in the following salt solution to stop the toning :

Salt	-	-	-	-	-	1 oz.
Water,	-	-	-	-	-	32 "

Then transfer the prints to the washing tray and wash one hour in running cold water, or in 16 changes of cold water.

The prints are then ready for

Mounting.—Take the prints out of the water and lay them one by one, face down, on piece of glass (it will not matter if they lap over each other). Press the water out of the prints by dabbing them with a towel. Prepare a little thin starch-paste and with the paste-brush spread the paste over the back of the prints ; lift up one of the top prints with a pin and lay it down on the face of a mount in the proper position. Lay a blotter or a piece of newspaper over it and rub it down smooth. Repeat for each print, until all are mounted.

If it is desired to burnish them, take them when dry to any photographer who has a burnisher, and he will run them through with his own prints for a small sum.

DEVELOPING AND PRINTING.

The Eastman Company was the first to render commercially possible the separation of the developing and printing from the *picture taking*. The division of labor inaugurated by them has brought picture taking within the reach of thousands of persons throughout the world who could not otherwise practice the art.

Carrying the division of labor still further in our own factory we employ trained operators in every branch of the work. Men who do nothing but develop, girls who do nothing but print, men who do nothing but silver paper, men who do nothing but tone, girls who do nothing but mount, girls who do nothing but "spot" prints, men who do nothing but burnish, etc., etc. As a consequence each becomes skilled in his or her particular branch, and the result, under good superintendence, is good work—better work in particular and in average, than can be done except under these favorable conditions.

ENLARGING.

In this department we also claim to excel. We are the largest manufacturers and users of Bromide paper in the world, and our operators are skillful and experienced. Kodak negatives lend themselves to enlargement with equal facilities.

Any Kodak negatives that will make a good contact print, will make a good enlargement of any size. A No. 1 Kodak negative $2\frac{1}{2}$ inches in diameter can be enlarged perfectly by us up to 35 inches in diameter, or of course to any smaller size. By judicious management a negative can often be made to give a better enlargement than contact print. This is owing to the opportunity enlarging affords for "dodging" and extra printing.

Kodak enlargments 14 x 17 inches, make attractive pictures for framing.

EASTMAN KODAK COMPANY,
Rochester, N. Y.

THE EASTMAN PHOTOGRAPHIC
MATERIALS COMPANY, Limited,
No. 115 Oxford St., London, Eng.,
4 Place Vendome, Paris,
Place Grimaldi, Nice.

No. 5 (5 x 7) FOLDING KODAK

PRICE LIST.

For
Transparent
Films.

- No. 5 Folding Kodak Camera, covered with black morocco, rapid rectilinear lens, Barker Shutter, shifting stops, view finder, and loaded with film for 32 negatives, covered with fine black leather, complete with shoulder strap, - \$65 00
- Reloading Camera, developing and finishing negatives, and furnishing one silver print from each negative, mounted and burnished (32 finished photographs) - 10 00

NOTE.—Where there are any failures we finish enough duplicates from the good negatives to make up the full number,

- Developing and Reloading only, - - 6 00
- Developing and printing without reloading, 6 00

PARTS OF SPOOLS.

- Developing and printing only, each, - - 20
- Developing only, each, - - - 10
- Printing only, each, - - - 12 1/2

On orders for less than one dozen, 25c. extra will be charged.

NOTE.—Any number of exposures made can be removed from the camera and the remaining film threaded up for further use.

- Spools of Kodak Film for 32 negatives, - 4 00
- Spools of Kodak Film for 54 negatives, - 6 00
- Extra Reels, each, - - - 50
- Developing Outfit for 32 negatives, - 4 28
- Printing Outfit for 32 prints, - - 5 03
- Combined Printing and Developing Outfits, 7 00

(No. 5 FOLDING KODAK PRICE LIST CONTINUED.)

SUNDRIES.

Tripods for time exposures, -	\$1.50 to \$5 00
Extra Caps for time exposures, mail, prepaid,	25
Printing Frames, 5 x 7, - - - -	50
Ferro-prussiate Paper, per 2 doz. sheets, 5x7,	55
Solio Paper, 2 dozen sheets, 5 x 7, - -	80
Gold bevel edge Mounts, (\$2 40 per 100), per dozen, - - - -	30
"Kodak" Ruby Lanterns for dark room, each,	2 00
Candle Lamps for dark room, each, - -	25
Solio Toning Solution, - - - -	50
Flash Light Apparatus, - - - -	1 50
Powder, extra, per package, 20 capsules, -	60
Intensifier, per 8 oz. bottle, - - - -	35
Bromide Potassium, per ounce, - - - -	15
Hyposulphite Soda per lb., - - - -	10
Powdered Alum, per lb., - - - -	10
Developer Powders, Eikonogen or Pyro, per package of 12 - - - -	50
Proto Sulphate of Iron, per lb., - - - -	10
Oxalate of Potash, per lb., - - - -	40
Citric Acid, 4 oz. bottle, - - - -	30
14 x 17 ENLARGEMENTS from No. 5	
Kodak Negatives, mounted on 18 x 22 card, - - - -	1 50

PATENTS.

THE KODAK CAMERA, ROLL HOLDER, Film, and processes and machinery for manufacturing the same, are covered by the following patents owned by the EASTMAN KODAK COMPANY :

No. 248,179	- - -	October 11, 1881.
No. 306,594	- - -	October 14, 1884.
No. 316,933	- - -	May 5, 1885.
No. 317,049	- - -	May 5, 1885.
No. 317,050	- - -	May 5, 1885.
No. 355,084	- - -	December 28, 1886.
No. 358,893	- - -	March 8, 1887.
No. 370,050	- -	September 20, 1887.
No. 370,110	- -	September 20, 1887.
No. 370,111	- -	September 20, 1887.
No. 370,216	- -	September 20, 1887.
No. 388,850	- -	September 4, 1888.
No. 405,454	- - -	June 18, 1889.
No. 407,396	- - -	July 23, 1889.
No. 407,647	- - -	July 23, 1889.
No. 408,596	- - -	August 6, 1889.
No. 414,735	- -	November 12, 1889.
No. 417,202	- -	December 10, 1889.
No. 432,990	- - -	July 29, 1890.
No. 433,020	- - -	July 29, 1890.
No. 433,774	- - -	August 5, 1890.
No. 533,775	- - -	August 5, 1890.
No. 440,137	- -	November 11, 1890.
No. 441,831	- -	December 2, 1890.
No. 442,216	- - -	December 9, 1890.

Other patents pending.

EASTMAN KODAK COMPANY,
77 Rochester, N. Y.

LIST OF PRINCIPAL FOREIGN KODAK AGENCIES.

Adelaide, Australia, BAKER & ROUSE.
 Amsterdam, Holland, E. FISCHER, JR., 88 Gelderschekade.
 Amsterdam, Holland, GROOTE & ZN., Kalverstraat.
 Antwerp, Belgium, L. VAN NECK, Rue Klapdorp.
 Berlin, Germany, ROMAIN TALBOT, Kaiser Wilhelm-Strasse 46.
 Bombay, THACKER & Co.
 Brussels, Belgium, SEB. GECELE, 86 Marche Aux Herbes.
 Brussels, Belgium, J. MARYNEN & Co., 22 Montague Aux Herbes Potageres.
 Brussels, Belgium, J. VANDENSCHRIEK 141 Chaussee d'Anvers.
 Cairo, Egypt, J. HEYMAN.
 Calcutta, India, JOHN BLEES.
 Christiana, Norway, H. ABEL, Prindsensgade 11.
 Christiana, Norway, J. L. NERLEIN, Skippergaden 28.
 Constantinople, Turkey, O. DIRADOUR & Co.
 Copenhagen, Denmark, BUDTZ MULLERS EFTERFOLGERE, Amagatory 22.
 Douanne, Switzerland, ENGEL-FEITNECHT.
 Florence, Italy, PIETRO SBISA, Piazza Signoria 4.
 Goteborg, Sweden, HASSELBLAD & Co.
 Havana, Cuba, J. LOPEZ, O'REILLY 19.
 Helsingfors, Finland, D. NYBLIN.
 Helsingfors, Finland, K. E. STAHLBERG.
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