

RESEARCH LIST

Media Archeology History and Theory

[Media Archeology as a Symptom - Thomas Elsaesser - YouTube](#)

[Media Archaeologies Evening - Thomas Elsaesser, Wolfgang Ernst & DARTS - Speakers](#)

[Media Archaeology - Jussi Parikka - YouTube](#)

Media Archeology Technology and Artifacts

[Artifacts of Media Archaeology: Inside Professor Erkki Huhtamo's Office - YouTube](#)

[The Magic Lantern - Professor Huhtamo's Cabinet of Media Archaeology: Part 1 - YouTube](#)

[Peep Media - Professor Huhtamo's Cabinet of Media Archaeology: Part 2 - YouTube](#)

[Archaeologists Are Seeing Cave Art in a New Light - Atlas Obscura](#)

History of the Postcard

[The History of the Use of Postcards](#)

[Giant grasshoppers plague Kansas! | National Museum of American History](#)

Waterfall Geology

Samuel Taylor Coleridge wrote in 1799, *"What a sight it is to look on such a cataract. The wheels that circumvolve in it, the leaping up and plunging forward of that infinity of pearls and glass bulbs. The continual change in the matter, the perpetual sameness of the form"*

[waterfall | National Geographic Society](#)

[What Makes a Waterfall? Maybe It Forms Itself - The New York Times](#)

Artists and Collectors

[Seeking Beauty as the World Falls Apart David Opdyke, artist](#)

[Zoe Leonard's Show Features Old Postcards of Niagara Falls - The New York Times](#)

[Zoe Leonard, artist](#)

[The mystery of the "same sky" postcards - YouTube James Brouwer, collector](#)

Books and articles that inspired our thinking:

About Landscape and Memory

[The Future of Nostalgia](#) by Svetlana Boym

[What photograph is](#) by James Elkins

[Reconstructing the View, the Grand Canyon Photographs of Mark Klett and Byron Wolfe](#) by Rebecca A. Senf, Stephen J. Pyne, Mark Klett, Byron Wolfe

[ChartingCanyon brochure PAM.pdf](#)

[*Third Views, Second Sights: A Rephotographic Survey of the American West* by Mark Klett](#)

[*Yosemite in Time, Ice Ages, Tree Clocks, Ghost Rivers*, with Rebecca Solnit and Byron Wolfe by Mark Klett](#)

[*An Inventory of Losses* by Judith Schalansky](#)

[*On Longing: Narrative of the Miniature, the Gigantic, the Souvenir, the Collection* by Susan Stewart](#)

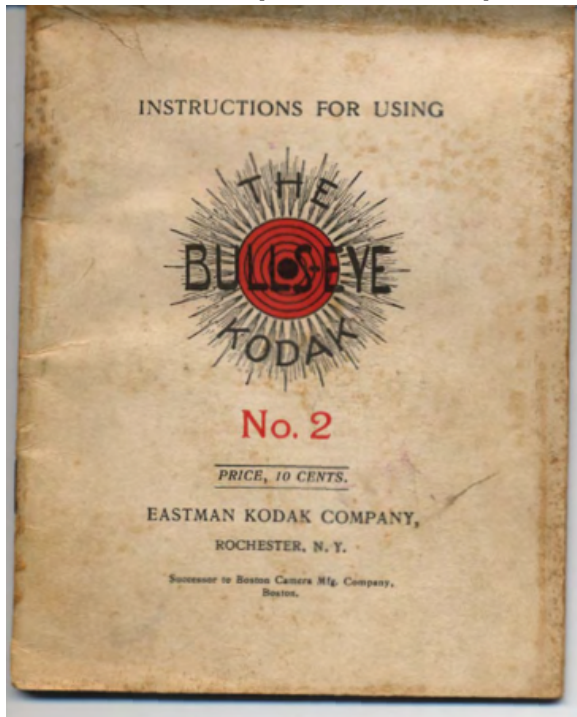
[*Robert Adams: Along Some Rivers: Photographs and Conversations* by Robert Adams](#)

[*A Thousand Crossings* by Sally Mann](#)

About the Landscape of Good Hope Island on the Milwaukee River
[County Officials Want to Pave Paradise](#)

KODAK BULLSEYE #2 CAMERA

Owner's manual provided as separate pdf



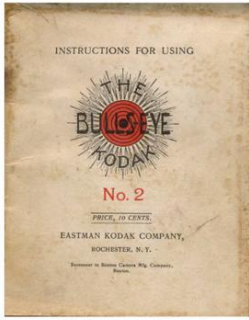
RESEARCH LIST

[Other Film Photography Equipment for sale | eBay](#)
[An introduction to the Kodak Bullseye 1895-96 - YouTube](#)
[Using 120 film with an 1896 Kodak Bullseye - YouTube](#)
[film adapter spools](#) <https://www.holgamods.com/holgamods/Main.html>

How we made our images with this 100 year old Kodak Bullseye #2 camera

- Purchase film spools to adapt 120 film to fit camera.
- Shoot outdoors, testing for function: only one useful aperture, one shutter speed, clouded viewfinder, film advance not synced with new film size.
- Adjust development times to accomodate overlapping frames.
- Using the computer monitor as a light box, digitally rephotograph the film negative with a hand-held iPhone in panorama mode. Invert image, adjust and print with Photoshop.

This is provided as a separate image file



BULLS-EYE No.2 Owner's Manual



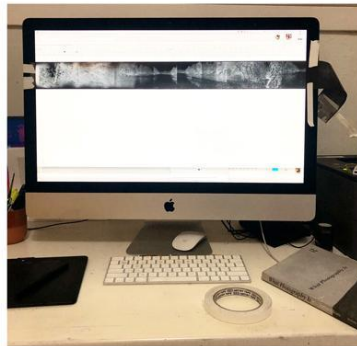
shutter/aperture mechanism



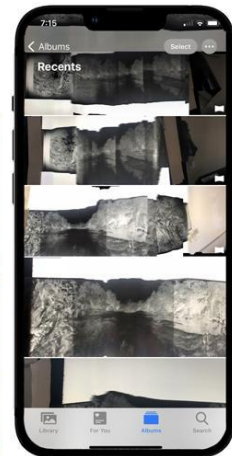
21st century upgrade for 120 film



processed film tests



computer as light table



iPhone in pano mode

INSTRUCTIONS FOR USING



No. 2

PRICE, 10 CENTS.

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

Successor to Boston Camera Mfg. Company,
Boston.

If it isn't an Eastman,
It isn't a Kodak.

BEFORE LOADING.

Before taking any pictures with the Bulls-Eye Kodak read the following instructions carefully and make yourself perfectly familiar with the instrument, taking especial care to learn the construction of 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 fraction 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 black paper wound tightly around the film to prevent the admission of light.

EASTMAN KODAK COMPANY

Rochester, N. Y.

KODAK
Trade Mark, 1888.

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

MANUFACTURERS OF

Kodaks,
Brownie Cameras,
Kodak Tank Developers,
Kodak Developing Machines,
Kodak Dry Mounting Tissue,
Cartridge Roll Holders,
Eastman's Solio Paper,
Eastman's Dekko Paper,
Eastman's Sepia Paper,
Eastman's W. D. Platinum Paper,
Eastman's Royal Bromide Paper,
Eastman's Standard Bromide Paper,
Eastman's Platino Bromide Paper,
Eastman's Enameled Bromide Paper,
Eastman's Matte-Enamel Bromide Paper,
Eastman's Transparent Film,
Eastman's Dry Plates,
Eastman's Kodoid Plates,
Eastman's Transparency Plates,
Tripods and
Other Specialties.

March, 1906.

INSTRUCTIONS

FOR USING THE

No. 2 BULLS-EYE KODAK

PATENTED:

Dec. 1, 1891. Sept. 25, 1894. Jan. 12, 1897. April 6, 1897.
April 11, 1899.

61 21

MANUFACTURED ONLY BY
EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

Successor to Boston Camera Mfg. Co.
Boston.

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Loading the Camera.

PART II.

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Printing on Solio Paper.

PART I.

LOADING THE CAMERA.

The film of the Bulls-Eye Kodak is furnished in light proof rolls 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.



THE FILM.

TO LOAD.

I. Take a position at a table as far as possible from any window and pressing on the bottom of camera near the tripod socket with the left hand pull out the nick-



Fig. I.

eled catch as indicated in Fig. I. and take the roll holder from the box. See Fig. II.

II. Pull out on the spring which is at the bottom of the front left hand

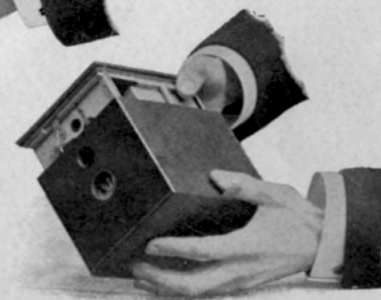


Fig. II.



Fig. III.

sure and get the "Top" at the top. Each spool is marked on the end.

IV. Cut the gum slip that holds the end of the paper and holding the thumb of the left hand firmly against the



Fig. IV.

roll as shown in Fig. IV., thread the black paper under the first cross piece and pull out beyond the end of camera nine inches. Pass the paper across the rollers in front of the pasteboard flap and under the second cross piece.



Fig. V.

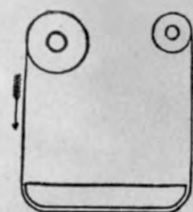
V. Thread into the slot in reel (see Fig. V.) being careful that the paper draws straight and true, and turn the key until the paper is taut. See Fig. VI.



Fig. VI.

corner of the roll holder. (Fig. III.)

III. Put the full spool into this recess and slip the pins into place in the hole in axis of spool and fasten with catch. Be



The paper should be in this position.

Fold the pasteboard flap up over the black paper and insert the camera body in the case once more.

Throughout the foregoing operations, from the time the gum slip is cut on the fresh roll of film until the roll holder is once more in place in the case, keep the black paper wound tightly to prevent fogging the film.

VI. Press on bottom of camera near tripod socket and push in the nicked catch at side.

VII. The roll of film in the Kodak is covered with black paper and this must be reeled off before a picture can be taken. Turn the key slowly to the left and watch in the little red celluloid window at the back of the camera. When 15 to 18 turns have been given, the figure I will appear before the window.

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

SINGLE PLATE EXPOSURES.

Occasionally it is desirable to make a single exposure in or about the house when the Kodak is not loaded and at a time when you do not care to purchase a fresh cartridge. In such an event the Bulls-Eye Kodak can be used for single plate exposures by removing the roll holder from box and inserting a glass plate between the black pasteboard flap and the aluminum rollers and putting a piece of black paper between the red celluloid window and the pasteboard flap. Close the camera once more and make the exposure the same as with film.

The operation of inserting the glass plate must, of course, be performed in a dark room. See page 20.

PART II.

MAKING THE EXPOSURES.

Section 1.

INSTANTANEOUS EXPOSURES. ("Snap Shots.")

The shutter is always set, and is operated for snap shots by pushing the spring alternately to right or left. (See Fig. I.)



Fig. I.

If the lever stands at the right hand side of slot simply push it to the left and *vice versa*.

If the spring should be pushed the wrong way, the shutter would simply remain unmoved, and no "click" would be heard, thus indicating that the spring should be pushed in the opposite direction.

To take instantaneous 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.

USE THE LARGEST STOP.

Snap shots can only be made when the largest stop is in the lens. 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 making snap shots both of the slides shown in Fig. II. should be pushed down to the limit of motion. Slide A controls time and instantaneous exposures. For snap shots this slide must be down.

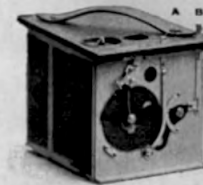


Fig. II.

Aim the camera at the object to be photographed and locate the image in the finder, which is alongside the key. The finder shows the scope of view and is a fac-simile of

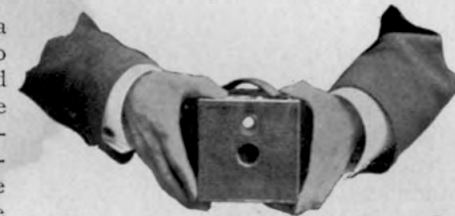


Fig. III.

what the picture will be. Hold the camera steady—hold it level as shown in Fig. III. and *push the lever*.

This makes the exposure.

For *Snap Shots* the slides must both be down as shown in Fig. IV.



Fig. IV.

Turn a new film into position: Turn the key slowly to the left until the next number appears before the window. Three or four turns will be sufficient to accomplish this.

Repeat the foregoing operations for each picture.

Slide B controls the stops, of which there are three. When it is clear down the largest stop is in place. This is the one to use for all snap shots: except where the sunlight is *unusually* strong, and there are no heavy shadows, such as views on the water or in tropical or semi-tropical climates, when the middle stop may be used.

The smallest stop must never be used for snap shots or absolute failure will result.

Section 2.

TIME EXPOSURES INDOORS.

1. Put the Kodak in Position.

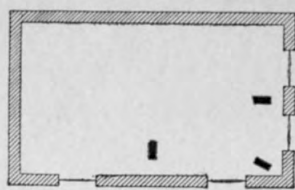


Diagram showing position of Kodak.

To make a time exposure, place the Kodak on some firm support like a table or tripod, and pull out the time stop (A) near lever, as shown in Figure II., page 7. Pull out the slide B, page 7, so that either the second or third stop will be before the lens.

Steady the Kodak with one hand and push the lever to open the shutter (see Fig. I.); give the proper time, (using a watch if more than two seconds), and press the lever in the opposite direction to close the shutter.

NOTE: It will be seen that when the time slide is pulled out, the shutter strikes as it passes the lens, stopping it half way across with the opening over the lens.

Try this a few times, before winding the film into position, to become accustomed to the operation.



Fig. I.

The diagram shows the proper position 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.

Turn a new film into position as described before. (See page 7.)

Time Needed for Interior Exposures.

This table is for the largest stop. When the second stop is used add one-half more time; when the smallest stop is used give four times the time of the table:

White walls and more than one window:

bright sun outside, 2 seconds;
hazy sun, 5 seconds;
cloudy bright, 10 seconds;
cloudy dull, 20 seconds.

White walls and only one window:

bright sun outside, 3 seconds;
hazy sun, 8 seconds;
cloudy bright, 15 seconds;
cloudy dull, 30 seconds.

Medium colored walls and hangings and more than one window:

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

Medium colored walls and hangings, and only one window:

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

Dark colored walls and hangings, and more than one window:

bright sun outside, 10 seconds;
hazy sun, 20 seconds;
cloudy bright, 40 seconds;
cloudy dull, 1 minute, 20 seconds.

Dark colored walls and hangings, and only one window :

bright sun outside, 20 seconds ;
hazy sun, 40 seconds ;
cloudy bright, 1 minute, 80 seconds ;
cloudy dull, 2 minutes, 40 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 chair partly facing the light, and turn the face slightly toward the camera (which should be at the height of an ordinary table). Centre the image in the finder. For a bust picture the camera should be $4\frac{1}{2}$ to 5 feet from the figure ; for a three-quarter figure 8 feet, and for a full figure 10 feet. The background should form a contrast with the sitter.

NOTE : In making portraits where the subject is less than 8 feet from the camera use the smallest stop and time accordingly (See page 9). As a general rule use the middle stop for portraits.

Kodak Portrait Attachment.

By the use of a Kodak Portrait Attachment this instrument may be used with a focus of only $3\frac{1}{2}$ feet, thus enabling the Kodaker to obtain large head and shoulder pictures equaling in size those of an ordinary mantello photograph.

The attachment is simply an extra lens slipped on over the regular lens and in no way affects the operation of the Kodak except to change the focus. Price 50 cents. Be sure and specify what camera the attachment is to be used with when ordering.

Time Exposures in the Open Air.

When the smallest stop 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—The shutter can hardly be opened and closed quickly enough to avoid over exposure.

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 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.

STOPS.

The stops should be used as follows :

1. THE LARGEST—For all ordinary instantaneous exposures when the sun shines.

2-3. THE MIDDLE—For instantaneous 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 pages 9 and 10.

1-4. THE SMALLEST—For time exposures out doors in cloudy weather. *Never for instantaneous exposures.* The time required for time exposures on cloudy days with smallest stop will range from $\frac{1}{2}$ second to 5 seconds, according to the light. The smaller the stop the sharper the picture.

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

Absolute failure will result if the smallest stop is used for Snap shots.

Section 3.

FLASH LIGHT PICTURES.

By the introduction of Eastman's Flash Sheets, picture taking at night has been wonderfully simplified. A package of flash sheets, a piece of card board, a pin and a match complete the list of essential extras.

The cost then is :

One Package Eastman's Flash Sheets, 25c.

With flash sheets no lamp is necessary; there is a minimum of smoke and they are far safer than any of the self-burning flash powders, 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 the 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 flash light, 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 8 of this Manual (except that the largest 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 card-board

which has previously been fixed in a perpendicular position. If the card-board is white it will act as a reflector and increase the strength of the picture.

The Flash Sheet should *always* be placed two feet behind and two to 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 card-board a foot square placed under the Flash Sheet will prevent any sparks from the flash doing damage.

TAKING THE PICTURE.

Having the Kodak and the Flash Sheet both in position and all being in readiness, open the camera shutter, stand at arm's length and touch a match to the lower corner of the Flash Sheet. There will be a bright flash which will impress the picture on the sensitive film. Then push the lever to close the shutter and turn a fresh film into place with the key ready for another picture.

THE FLASH SHEETS.

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 card-board, one above the other, the corners slightly overlapping.

TABLE.

For 10 feet distance and light walls and hangings use 1 sheet.							
"	10	"	"	dark	"	"	" 2 sheets.
"	15	"	"	light	"	"	" 2 "
"	15	"	"	dark	"	"	" 3 "
"	25	"	"	light	"	"	" 3 "
"	25	"	"	dark	"	"	" 4 "

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 8 feet, and for a full figure 10 feet.

When using the portrait attachment for flash lights the subject should be only $3\frac{1}{2}$ feet from camera.

The flash should be on the side of the Kodak away from the face, and should not be higher than the head of the sitter.

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 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 *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's 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'S FLASH CARTRIDGES AND FLASH POWDER.

Eastman's Flash Cartridges or Eastman's Flash Powder 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 powder or cartridges are only superior where absolutely *instantaneous* work is essential.

PART III.

REMOVING THE FILM.

No dark room is required in changing the spools in the Bulls-Eye. The operation should, however, be performed in a subdued light.



Fig. I.

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

V. Hold the reel tightly with one hand to prevent the paper from loosening and fasten down the black paper with the gummed

I. When the last film has been exposed, turn the key about 15 half turns.

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

III. Unloose the catch at the bottom and take the roll holder from the box, as shown in Figs. I. and II., page 3.



Fig. II.

slip that will be found at end of roll, thus preventing the paper from unwinding; loosen the key by turning to the right and pull it out.

VI. Remove the film from Kodak by swinging out the pivoted ratchet carrier as shown in Fig. II. The roll is then merely pulled away from the ratchet pins, when it will be free.

VII. Wrap up the roll immediately to prevent the light from injuring the film.

VIII. Now take out the empty spool (this will form the new reel) and slip the three pins in the ratchet wheel into the holes

in the end of the spool, as shown in Fig. III. Swing the ratchet carrier back into place; insert the key and turn to the left until it is screwed firmly into place. This forms the new reel.

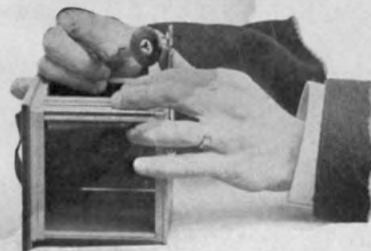


Fig. III.

IX. Load as described in part one, 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.

¹ NOTE: In mailing us film for development do not fail to mark the package plainly with your name and address and write us a letter of advice, with remittance.

CLEAN LENSES.

Dirty or dusty lenses are frequently the sole cause for photographic failures. Lenses should be frequently examined by looking *through* the lens and if found to be dirty, it should be wiped, both front and back, with a clean, soft linen handkerchief. It is well, also, to occasionally wipe out the inside of Kodak with a slightly damp cloth. In dusty summer weather this needs especial attention.

If the lens is evenly covered with a film of dust or dirt, the effect will be to cut off a great deal of the light and make the picture undertimed.

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 lens or mirror. Glass that is tightly packed in cases, as well as that which is exposed to the air, is liable to take on this film, supposedly from peculiar atmospheric conditions.

Whatever the cause, the result is the occasional dimming of finders and lenses. In the case of lenses, it is, of course, easy enough for anyone to wipe them off. 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 on a bent wire.

The mirrors in the brilliant finders in the No. 2 Bulls-Eye Kodaks may be gotten at by simply removing the two screws which hold in frame on top of finder and lifting out frame. Now turn the Kodak over and the "brilliant" lens of finder will drop out and the mirror can be easily cleaned.

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 methods of developing film give better results than the dark-room way.

Film may be developed in daylight in two ways, by the Kodak Tank Developer method or with the Kodak Developing Machine. Detailed directions for developing by either of those methods will be found in the manuals which accompany the goods. The operations are given briefly in the following pages.

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

Developing with the Kodak Tank Developer.

Provide a 3½ inch Tank Developer for use with No. 2 Bulls-Eye.

The Kodak Tank Developer 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,



Fig. 1.

in the holes in the 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 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.

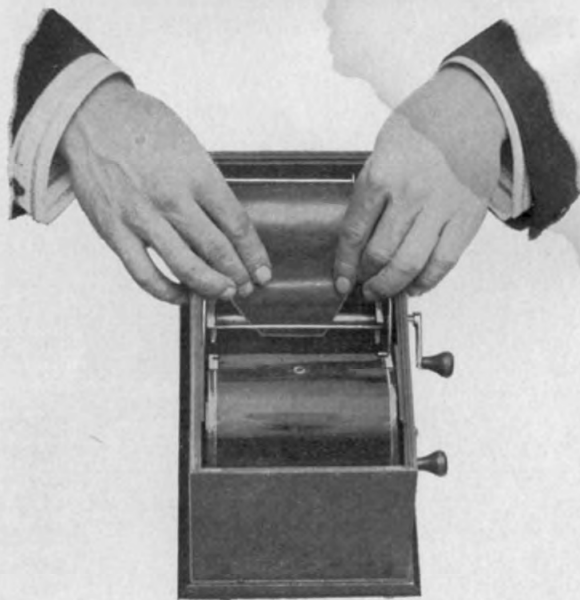


Fig. II.

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. (Fig. 2.) 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 entire apron on to spindle, maintaining a slight tension on apron in so doing by resting one hand on it.

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

Important.

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

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

7. Now hook apron 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.

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 black 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 Tank Developer Manual.

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

11. Remove entire Transferring Reel (now containing apron, black 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.

Using the Solution Cup.

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

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

Now turn entire cup end for end and place in a tray or saucer to catch any slight leak from the cup; after seven minutes reverse it so cover will be up, and remove cover. At fifteen minutes replace cover and again invert the cup.

Turning the solution cup allows the developer to act evenly and adds brilliancy and snap to the negatives. Whenever the cup is upright during development the cover should be removed.

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.



Fig. III.



Fig. IV.

13. The wire hook is to be used for lifting the reel out of the cup, (Fig. 5). Hook on 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 development 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 black paper and place immediately in the Fixing Bath which should be in readiness, prepared in accordance with directions on page 29.

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

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

Before developing another roll of film, be sure and wipe the apron thoroughly.

If the Tank Developer is not to be used again immediately, the apron and tank should be washed and wiped dry.

Keep apron wound on Transferring Reel when not in use. Never leave apron soaking in water. The apron will dry very rapidly if immersed for a moment in very hot water.

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 one Solution Cup, one Transferring Reel and one 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.

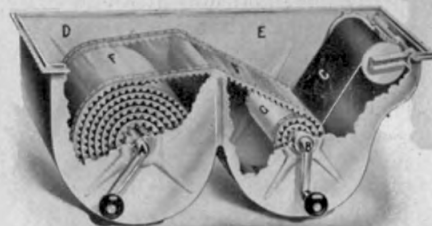


Fig. V.

Developing in Kodak Developing Machine.

The Kodak Developing Machine is simple to use but the film must be kept in motion during development.

After removal from the camera the cartridge of exposed film is inserted in the Kodak Developing Machine so that the black paper will lead from the top as shown in cut, the transparent apron (F-F) having first been wound onto Arbor "A."



Kodak Developing Machine.

The end of Apron (F-F) is hooked onto Arbor "B"; the developer is poured into compartment "E," and the top put on machine. The operator now turns handle to the right slowly and evenly until the time of development, about six minutes, has expired. The film (G) winds up inside of Apron but with the face not touching it, thus allowing free action of the developer. The cover is then removed from the machine and the developer poured off; the machine is now filled with clean water, the cover replaced and the handle given a few turns; the water is poured off and the operation repeated. This washes the developer from the film which is now removed from the machine by taking hold of either the Apron or end of the black paper and pulling out of machine, the film being taken hold of when it appears and pulled free from the black paper. The film is now placed in a tray of Fixing Solution prepared according to directions on page 29.

The gummed sticker which holds down the end of black paper is then broken, the paper pulled out and the end attached to Arbor "B" by slipping under the wire guard. Arbor "B" is now turned to the right until the word "stop" appears on top of cartridge.

DEVELOPING IN DARK-ROOM.

Provide an Eastman's Bulls-Eye Developing and Printing Outfit.



This outfit contains paper and chemicals for 12 pictures and can be used with any camera for films or plates up to and including $3\frac{1}{2} \times 3\frac{1}{2}$. The simplest, cheapest and best outfit for the beginner.

1 Kodak Candle Lamp,	\$.75	$\frac{1}{2}$ Pound Kodak Acid Fixing	
4 Developing Trays,	.40	Powder,	\$.15
1 4 oz. Graduate,	.10	1 Dozen Sheets $3\frac{1}{2} \times 3\frac{1}{2}$ Solio	
1 $3\frac{1}{2} \times 3\frac{1}{2}$ Printing Frame,	.25	Paper,	.15
1 $3\frac{1}{2} \times 3\frac{1}{2}$ Glass for same,	.05	1 Bottle Solio Toning Solution,	.10
1 Stirring Rod,	.05	1 Package of Bromide of Potas-	
$\frac{1}{4}$ Dozen Eastman's Special De-		sium,	.10
veloping Powders,	.15	Directions,	.10
			\$1.85

*Price, complete, neatly packed,

*This outfit cannot be shipped by mail.

\$1.25

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.



The Lamp.

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.

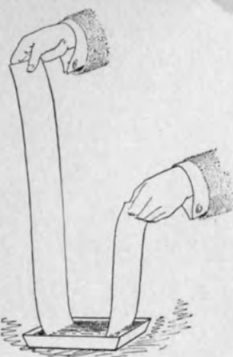
Having provided such a room or closet, where, when the door is closed, no ray of light can be seen:

Set up on the table or shelf the Kodak Candle Lamp.

The lamp gives a subdued red 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 the operator.

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 the graduate and fill it up to top ring 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 black 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, development may be commenced.



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 the 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's N. C. Film, care must be taken not to hold it close to the lamp for any length of time. This film is very rapid and is orthochromatic, therefore liable to fog unless handled carefully in the dark-room or developed in the Developing Machine.

6. After completing development cut the negatives apart with a pair of shears, transfer to the third tray and rinse two or three times with clear, cold water.

ANOTHER WAY

We advise the use of a Kodak Developing Machine or the foregoing method of development. If desired, however, the negatives may be cut apart before development is commenced, by the following method:

a. Unroll the film and cut the exposures apart as shown in Fig. 1.

In unrolling the film preparatory to development, care must be taken that the end be not allowed to roll up over the paper. The exposures should be cut apart with the PAPER ON TOP.

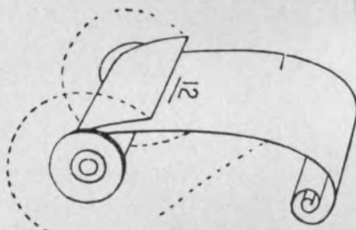


Fig. 2.
WRONG.

b. Put the exposures into the first tray one by one, *face down*; put them in edgewise, to avoid air bells, and immerse them fully.

Cover the tray with a bit of brown paper to keep out the light from the lamp.

c. Take one of the exposures from the water and immerse it, *face down*, in the tray of developer (second tray). Rock it back and forth to prevent streaks and air bubbles; in about 1 minute the film will begin to darken in spots, representing the lights of the picture, and in about two minutes the operator will be able to distinguish objects in the picture. The developer should be allowed to act 5 to 10 minutes. The progress of the development may be watched by holding the negatives from time to time up to the lamp.

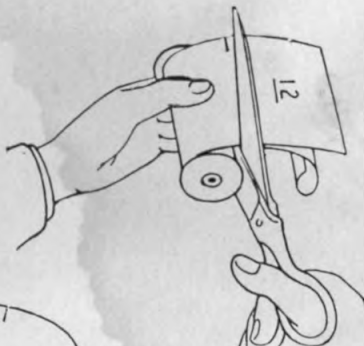
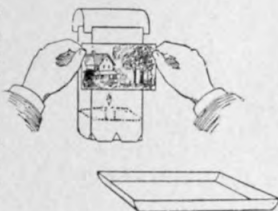


Fig. 1.
RIGHT.

Fig. 2 shows a cartridge unrolled with the film on top. To correct this simply turn back the film as indicated by the dotted lines, thus bringing the film under the paper.

d. Transfer the developed film to the third tray and rinse two or three times with water, leaving it to soak while the next film is being developed.

NOTE: A dozen negatives can be developed one after the other in one portion of the developer; then it should be thrown away and a fresh portion mixed.

Only one negative should be developed at a time until the operator becomes expert, then he can manage three or four in the tray at one time and the developer will answer for twenty-four films before being exhausted.

As each successive negative is developed it should be put with the preceding negatives in the washing tray, and the water changed twice to prevent the developer remaining in the films from staining them.

From this stage the treatment of negatives is the same whether they have been developed singly or in the strip or in the Kodak Tank Developer or Kodak Developing Machine.

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 then 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 appearance 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 (anhydrous),	80 grains.

When fully dissolved add the following hardener :

Powdered Alum,	$\frac{1}{2}$ ounce.
Citric Acid,	$\frac{1}{2}$ 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.

NOTE—If you are using an Eastman developing outfit the fixing solution must only be used in tray No. 4, and the negatives, after fixing, must not be put in either No. 1 or No. 2 trays. Neither must any of the fixing solution be allowed to touch the films, through the agency of the fingers or otherwise, until they are ready to go into the fixing bath, otherwise they will be spotted or blackened so as to be useless.



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.

Drying with Clips.

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.

If the film has been cut up, 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 forewarn him and we therefore describe the common causes of failure.

Under-Exposure.

Caused by making snap-shots indoors, or in the shade, or when the light is weak, late in the day, or by closing the lens too soon on time exposures.

Over-Exposure.

Caused by too much light.

Negative develops evenly, shadows almost as fast as high lights. If a negative is known to be over-exposed before development is begun the over exposure can be partly overcome by the addition of bromide of potassium to the developer before development begins. After the bromide has been added to the developer it should not be used for another negative unless it is known to have been over-exposed.

If care is taken to properly time the exposures, the above difficulty will be avoided.

Over-Development.

Caused by leaving the negative too long in the developer.

In this case the negative is very strong and intense by transmitted light and requires a very long time to print. The remedy is obvious.

Under-Development.

Caused by removal from the developer too soon.

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. If the development is carried on as before directed, this defect is not liable to occur.

PART V

PRINTING ON EASTMAN'S SOLIO PAPER.

Solio Paper which we furnish with our outfits gives prints having beautiful warm, brown tones and which are usually mounted on cardboard and highly burnished.

METHOD OF PRINTING.—Open the printing frame of the outfit and lay the negative back down upon the glass (the back is the shiny side). Place upon this a piece of Solio Paper, face down. Replace the back of the frame and secure the springs. The back is hinged to permit of uncovering part of the print at a time to inspect it without destroying its register with the negative. The operation of putting in 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 print is a little darker tint than the finished print should be. Place prints without previous washing in the following combined toning and fixing bath:

- 1 oz. Eastman's Solio Toning Solution.
- 2 oz. Cold 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 lie in contact. Turn the prints all face down and then face up and repeat this all the time 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 reaches the shade desired.

Three ounces of the diluted solution will tone one dozen prints; after that a new solution should be made the same as before.

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

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

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

The prints are then ready for mounting or they can be laid out and dried between blotting papers.

EASTMAN KODAK COMPANY
Rochester, N. Y.

AGENCIES,
LONDON PARIS BERLIN BRUSSELS VIENNA
ST. PETERSBURG MOSCOW
LIVERPOOL GLASGOW MELBOURNE
MILAN LYONS

PRICE LIST

No. 2 Bulls-Eye Kodak, for $3\frac{1}{2} \times 3\frac{1}{2}$ pictures,	\$8 00
N. C. Film Cartridge, 12 exposures, $3\frac{1}{2} \times 3\frac{1}{2}$,	60
Do., 6 Exposures,	30
Do., Double-Two Cartridge, 4 exposures,	20
Black Sole Leather Carrying Case,	1 25
Kodak Tank Developer, $3\frac{1}{2}$ inch,	5 00
Duplicating Outfit for same,	2 50
Kodak Tank Developer Powders for $3\frac{1}{2}$ inch Tank, per $\frac{1}{2}$ doz.,	20
Kodak Developing Machine, Style E, for Developing 4 x 5 films or smaller,	7 50
Style E, Kodak Developing Machine Outfit,	1 60
Kodak Developer Powders, for Style E Machine, per package of $\frac{1}{2}$ dozen,	25
Kodak Acid Fixing Powder, per lb.,	25
Do., $\frac{1}{2}$ lb.,	15
Bulls-Eye Tripod, folds in two sections,	1 50
Bulls-Eye Developing and Printing Outfit, including Solio Paper, etc., for 12 prints,	1 25
Solio Paper, $3\frac{1}{2} \times 3\frac{1}{2}$, per pkg. 2 dozen,	20
Combined Toning and Fixing Solution for Solio, per 8 oz. bottle,	50
Do., 4 oz. bottle, (in mailing case including postage, 50)	30
Eastman's W. D. Platinum Paper, per doz., $3\frac{1}{2} \times 3\frac{1}{2}$,	20
Eastman's Embossing Boards, for embossing W. D. Platinum prints, $3\frac{1}{2} \times 3\frac{1}{2}$,	10
Velox Paper, $3\frac{1}{2} \times 3\frac{1}{2}$, per doz.,	15
Eastman's Sepia Paper, per pkg., 2 doz., $3\frac{1}{2} \times 3\frac{1}{2}$,	15
Eastman's Hydrochinon, Pyrogallic and Eikonogen Developer Powders in sealed glass tubes, per box of five tubes,	25
Duplex Mounts, per 100,	50
Do., per 50,	25
Bevyplane Mounts, per 100,	80
Do., per 50,	40
Eastman's Indexed Negative Album, to hold 100 $3\frac{1}{2} \times 3\frac{1}{2}$ film negatives,	75
Eastman's Kodak Dark-Room Lamp, No. 2, $\frac{5}{8}$ in. wick,	1 00

Kodak Trimming Board, No. 1, 5 inch,	\$ 40
Transparent Trimming Gauge for above,	20
Developing and Printing, unmounted on Solio with adhesive backs, or mounted,	12 $\frac{1}{2}$
Developing and Printing on Velox, unmounted, each,	11 $\frac{1}{2}$
Do., mounted,	12 $\frac{1}{2}$
Printing, unmounted on Solio, with adhesive backs, or mounted,	08
Printing, unmounted on Velox,	07
Do., mounted,	08
Developing only, each,	06

On orders for developing and printing less than one dozen, 25 cents extra will be charged. Prints furnished unmounted on Velox paper unless otherwise specified.

Eastman's No. 1 Flash Sheets, per package, $\frac{1}{2}$ dozen,	25
" No. 2 " " " " " " " " " "	40
" No. 3 " " " " " " " " " "	60
Kodak Dry Mounting Tissue, $3\frac{1}{2} \times 3\frac{1}{2}$, 3 doz.,	10
Kodak Portrait Attachment, for use with No. 2 Bulls-Eye Kodak,	50
Eastman's Film Developing Clips, $3\frac{1}{2}$ inch, per pair,	25
Kodak Push Pins (for pinning up film negatives while drying), per box of 6,	10
The Lakeside Album No. 10, to hold 80 pictures, $3\frac{1}{2} \times 3\frac{1}{2}$, black cover and leaves,	50
The Modern Way in Picture Making, cloth bound,	1 00

(The best book for the amateur ever written.)

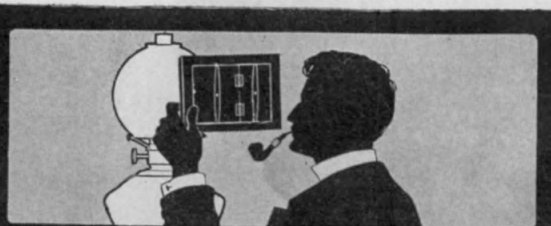
TERMS.

The prices in this manual are strictly net, except to regular dealers who carry our goods in stock.

For the convenience of our customers we recommend that they make their purchases from a dealer in photographic goods, as by so doing they can save both time and express charges.

EASTMAN KODAK CO.

Rochester, N. Y



VELVET VELOX

A Velox paper with a semi-gloss surface that adds lustre to the shadows. Its breadth of gradation adapts it to use with almost any negative.

FURNISHED ALSO AS POST CARDS.

NEPERA DIVISION,
Eastman Kodak Co.,
Rochester, N. Y

PIN TO A CARD AND TOUCH WITH A MATCH.

THAT'S ALL THERE IS TO USING
EASTMAN'S FLASH SHEETS.

They burn more slowly than ordinary flash powders, giving a softer light and consequently a more natural expression to the eyes.

Clean, convenient, a minimum of smoke.

No. 1, per package of
½ doz. sheets, 25 cents.

EASTMAN KODAK CO.

For sale by all dealers.

Rochester, N. Y

DEVELOP FILM IN DAYLIGHT

WITH THE

Kodak Tank Developer

SIMPLE

CONVENIENT

Price, 3 1/2 inch,

\$5.00

Eastman Kodak Co

Rochester, N. Y

ROCHESTER, N. Y.

TO THE MAN WHO DOES THE WORK
Chemical Hot Shot Aimed At Your
Memory In The Hope That We
Make A Bull's-eye.

When you want to avoid friction marks (black streaks on glossy or semi glossy papers) or add contrast to your prints, remember that Argo Soda PREVENTS aforesaid marks, makes a contrasty developer and saves time and trouble. Hydroquinone-Metol-Argo Soda-Water -- that's all. One soda takes the place of two in your developer.

When you want the very softest effects in development, remember that Defendol was built solely with that end in view and -- mark this -- it is absolutely non-poisonous.

When you are looking for the best blacks on bromide and a little of the blue-black in gaslight papers, remember that Monol takes the place of the very best chemical that you can think of for the purpose and -- take heed -- it costs you only \$7.00 per pound.

When you are looking for the simplest of all prepared chemicals for sepia tones, remember that Defender Sepia Toner was the original article in this line and -- note this -- it is one of the best intensifiers for dry plates that you have ever used. Two articles for the price of one.

Also, now that you're listening, remember that all the other chemicals you use, when under the Defender Brand, are positively full strength and absolutely pure.

DEFENDER PHOTO SUPPLY CO.
Argo Park Rochester, N. Y.

DEFENDER PHOTO SUPPLY CO., ARGO PARK,

DEFENDER PHOTO SUPPLY CO., ARGO PARK,

ROCHESTER, N. Y.

RS

DIRECTIONS FOR WORKING DISCO GLOSS

IN printing this paper, it is only necessary to print about two or three shades darker than you desire the finished prints.

For toning prints in separate bath, wash first in five or six changes of fresh water, or until the water ceases to look milky after standing a few minutes.

Tone prints in the following bath, moving them while toning:

Water, -	40 ounces
Chloride of Gold, -	1 grain

Add a sufficient quantity of borax to turn red litmus paper blue. Tone prints to the desired shade and stop, as they will not change in fixing bath.

Fixing bath prepared as follows:

Water, -	48 ounces
Hypo, -	2 ounces

About fifteen minutes in this bath is sufficient. Keep prints separated.

Wash your prints thoroughly after fixing. Upon this depends their permanency.

IF IT ISN'T AN EASTMAN,
IT ISN'T A KODAK.

RADIOPTICON JUNIOR

An optical instrument which projects an image from an opaque image onto a projection screen or other surface, using an intense light and one or more lenses to focus the image. A projector which projects an image of an opaque object is now usually referred to as an overhead projector. Specific instruments have been called by different names, such as balopticon, radiopticon, radiopticon, mirrorscope, etc.

This projector, formerly called an episcopes, is a device for projecting flat opaque images, like postcards, photographs, prints, books, or small three-dimensional objects on a wall. The JUNIOR model was the most colorful of all the postcard projectors and was, therefore, very popular with children. The Radio Junior was often given a premium for selling magazine subscriptions in the early 1900s.

Here's Delightful Home Entertainment

Post Card Projectors

Uses Post Cards, Photos, Pictures, Etc.
Instead of Expensive Glass Slides

The 1917 Model C \$2.27



Size:
Length, 9 in.
Width, 6 in.
Height, 8 in.
Shipping wt., 4 lbs.

Very Simple and Easily Operated
Equipped with carefully ground and polished lens, reflector, 3 in. thermally ventilated, to keep machines cool. Basically an improvement over the common tin hat type of low priced post card projectors.
Shows images on screen 2 to 3 ft. long, from 5 1/2 in. post cards.

157D8810—1917 Model Electric Projector. Connects on any electric house lighting socket. Two incandescent lamps. Price, complete \$2.27

157D8814—1917 Model Acetylene Projector. Fitted with two powerful acetylene burners, including an acetylene generator. Price does not include carbide (see 57D8850). Price \$2.27

157D8816—1917 Model Gas Projector. Price..... 2.27

The 1917 Model D \$4.57

Size: Length, 10 in.
Width, 8 1/2 in.
Height, 10 1/2 in.
Shipping weight, 6 1/2 pounds.

The Modern Magic Lantern



Shows images on screen 3 feet long, from 5 1/2-inch post cards. Has 3-inch double plano-convex lenses in removable mounts and polished parabolic reflectors with two sliding picture holders, permitting quick change of pictures without changing the lamp.

157D8826—Model D Electric Projector. Powerful incandescent lamp. Price, complete, including connecting cord and bulb \$4.57

157D8830—Model D Acetylene Projector. Fitted with two high power acetylene burners. Complete, including carbide. (See 57D8850.) Price \$4.57

157D8832—1917 Model D Gas Projector..... 4.57



Reproduces Pictures in their Natural Colors

Any illustration or flat object (up to 5x9 1/2 inches, depending on size of machine) may be shown on the screen, enlarged and in all its own colors; not limited to post card size.

Any photograph or picture you have, any illustration you have from paper, magazine or catalogue, cartoons, home drawn animals, such objects as butterflies, leaves, pressed flowers—in short, almost anything—may be shown. No glass slides necessary.

The Senior Post Card Projector

Enlarge any Photograph, Picture or any Small, Flat Object

The image on the screen is larger, brighter and sharper. Thoroughly satisfactory instrument for adults where post cards only are to be shown. Shows image 4 feet long, from 5 1/2-inch post cards. Has 3 1/2-inch double plano-convex lenses in removable mounts and large polished parabolic reflectors, two sliding picture holders, permitting quick change of pictures, without opening lantern.

157D8818—Senior Electric Projector. Fitted with two high candle power electric lamps. Right out of electric cord. Complete, ready to operate. Price..... \$6.85

157D8822—Senior Acetylene Projector. Fitted with two incandescent burners. High candle power. Complete, ready to operate, including carbide (see 57D8850). Price..... \$6.85

157D8824—1917 Senior Gas Projector. Price..... 6.85

Our Prices Show Distinct Savings

Is as popular as the Talking Machine for home, parlor and auditorium amusement. Our prices are less than the prices asked for similar machines at retail.

There are no views to buy nor attachments to wear out. You furnish the pictures to be enlarged from your own collection of post cards, photographs, or from books, papers, etc.

57D8850—Note: Calcium carbide for use with the acetylene machine in 2-pound can. Shipping weight, 2 1/2 pounds. Per can 10c

Our Special \$11.98

Size:
Length, 10 1/2 inches.
Width, 8 1/2 inches.
Height, 12 inches.
Shipping wt., 14 1/2 lbs.
Image 5 ft.



Any picture 5x7 in. may be inserted and held in perfect focus in the self-adjusting, adjustable holder. Particularly desirable for photographs. Is adaptable for various kinds of pictures; also larger lantern and greater illumination, yielding larger as well as much more brilliant screen images. Has two patented adjustable picture holders, fitted into a double sliding carrier. Has 4-inch double plano-convex lenses in removable mounts, with black and silver for pictures. Yields on a 5 to 10-foot screen, images from a 5 1/2-inch post card at 12 to 14 feet from screen.

157D8834—Special Electric Projector. Two powerful incandescent lamps, two feet of electric cord. Complete. Our price \$11.98

157D8838—Special Acetylene Projector. Two high candle power acetylene burners. Price does not include carbide (see 57D8850). Our price..... \$11.98

Fig. 14. Several models of postcard projectors offered for sale in the 1917 Montgomery Ward catalog. The postcard projector is described as "the modern magic lantern," and pictures on the screen are said to "look like stereopticon or magic lantern views." Note the rectangular image projected on the screen, a correct rendition of how the projected image actually looked. The magic-lantern iconography of a circular image has been abandoned in favor of the more modern rectangular view from a stereopticon projecting standard photographic slides. Wells collection.

image source:

[MLGvol22no03.pdf](#) the magic lantern gazette vol22 no3 - Google Search

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Operating Post Card Projector - YouTube <https://www.youtube.com/watch?v=M0ovXX6l63A>

More about Magic Lanterns

[Virtueel Toverlantaarmuseum - 'de Luikerwaal' - Dutch Virtual Magic Lantern Museum.](#)

How we shot our project with the Radiopticon Junior



Choosing cameras from the collection

The Radiopticon Junior



Radiopticon before restoration

electrical upgrade

ready for projection

selecting postcards



placing postcards

show time

postcard image projection