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2

INSTRUCTIONS
FOR
DEVELOPING FILM
WITH THE
KODAK
Film Tank

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

"3½ INCH,"
"5 INCH"
AND
"7 INCH"

Published by the
EASTMAN KODAK COMPANY,
Rochester, N. Y.

KODAK

Trade Mark 1888.

EASTMAN KODAK COMPANY.

ROCHESTER, N. Y.

MANUFACTURERS OF

Kodaks,
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Kodak Film Tanks,
Kodak Dry Mounting Tissue,
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May, 1912.

INSTRUCTIONS

FOR USING THE

Kodak Film Tank

"3½ INCH," "5 INCH" and "7 INCH"

The "3½ Inch" Model B-2 Kodak Film Tank is for Use with all Brownie and with No. 1, 1A, 2, 3, 3A, Folding Pocket Kodak and No. 2 Bulls-Eye Cartridges

The "5 Inch" Model C Kodak Film Tank is for Use with Kodak Cartridges or Eastman Cartridge Roll Holder Cartridges, having a Spool Length of Five Inches or Less

The "7 Inch" Kodak Film Tank is for Use with No. 5 Cartridge Kodak and No. 5 Cartridge Roll Holder Cartridges

Published by the
EASTMAN KODAK COMPANY,
Rochester, N. Y.

Operating the Film Tank.

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

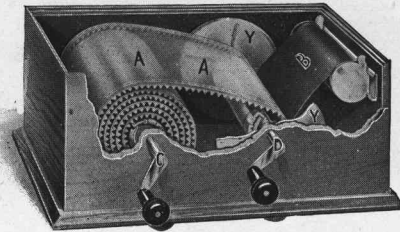


Fig. 1. www.orphancameras.com

Setting up the Film Tank.

1. Take everything out of the box. Take the apron and Transferring Reel out of solution cup.
2. The axles marked C and D, in the cut, are to be inserted 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. These axles are interchangeable. The axle "C" must be pushed through the hollow spindle which will be found loose in the box. This spindle has a lug at each end to which the hooks of the apron are to be attached.
3. 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. Both axles "C" and "D" must be pushed clear through into the holes on the opposite side of the box.

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.

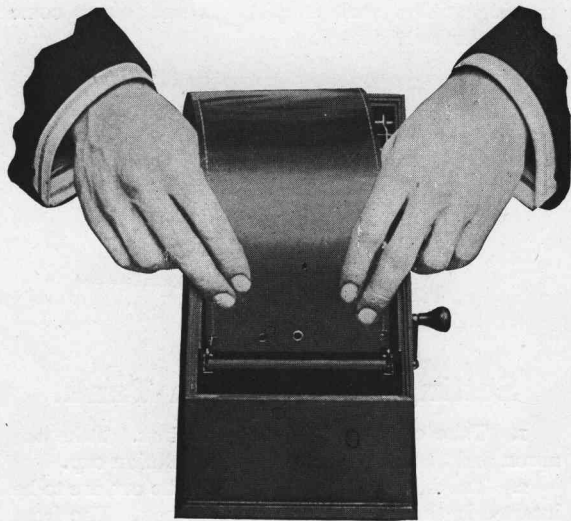


Fig. 2.

(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 axle, maintaining a slight tension on apron, in so doing, by resting one hand on it.

5. Insert film cartridge in spool carrier (Fig. 3), and close up the movable arm tight against end of spool.

Have the duplex paper ("B" in Fig. 1) lead from the top.

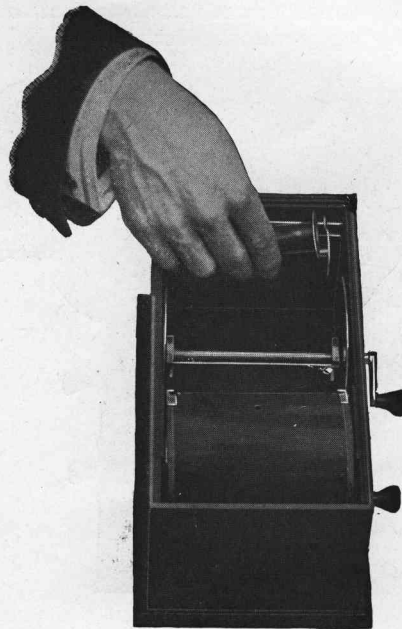


Fig. 3.

Important.

Film to be used in the Kodak Film Tank must be fastened to the duplex paper at both ends. All films are fastened at one end in our factory. For instructions on how to fasten the other end, see page 16.

6. Break the sticker that holds down the end of duplex paper, thread the paper underneath wire guard on Transferring Reel—through which axle "D" passes (Fig. 4), and turn axle slowly to right until the word "stop" appears on duplex paper.

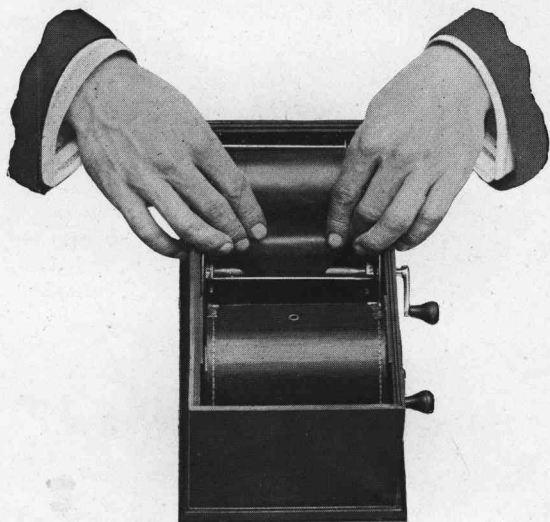


Fig. 4.

7. Now hook apron to lugs on Transferring Reel (Fig. 5), in precisely the same manner that you hooked the opposite end to lugs on the spindle, 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 duplex paper, film and apron are rolled up together on Reel. As soon as this is completed the handle will turn very freely.



Fig. 5.

9. Prepare developer as described on page 9.
10. Now remove cover from box and draw out axle "D" (Fig. 6), holding apron and duplex paper with other hand to keep end of apron from loosening.

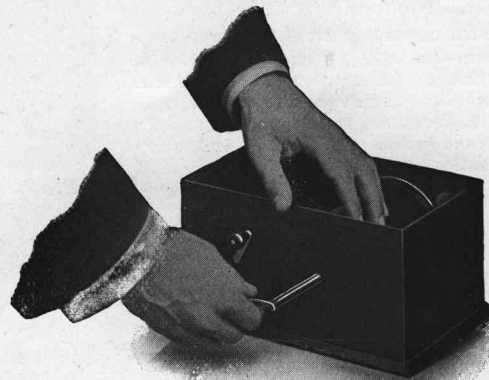


Fig. 6.

11. Remove entire Transferring Reel (now containing apron, duplex paper and film) which is freed by pulling out axle "D" and insert immediately in the previously prepared developer.

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

Using the Solution.

12. Having filled Solution Cup, as directed on page 11, lower Transferring Reel into Cup, with the end containing crossbar up. (Fig 7.) 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 20 minutes.

NOTE.—Immediately after lowering Reel into solution cup catch it with wire hook and move slowly up and down two or three times, taking care, however, not to raise any part of Reel above the surface of solution. This is to expel air bubbles.

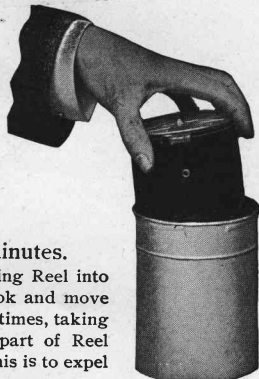


Fig 7.

Then place the cover on the cup (Fig. 8) putting lugs on cover into the grooves and tighten cover down by turning to right.



Fig. 8.

Now turn the entire cup end for end, and place in a tray or saucer to catch any slight leak from the cup.

At the end of three minutes again reverse the cup, and, thereafter reverse

every three minutes until the time of development (20 minutes) has elapsed.

Turning the solution cup in this manner allows the developer to act evenly and adds brilliancy and snap to the negatives.

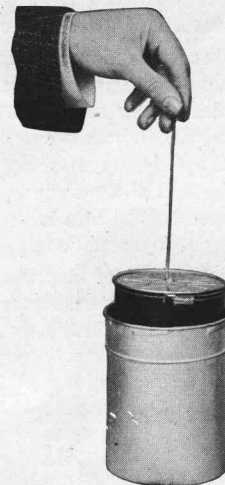


Fig. 9.

The wire hook is to be used for lifting the reel out of the cup. Hook on to the cross bar in one end of reel. (Fig. 9).

14. When development is completed pour out developer and fill cup with clear, cold water and pour off, repeating this operation three times to wash the film. Then remove Transferring Reel; separate film

from duplex paper and place immediately in the Fixing Bath, which should be in readiness, prepared in accordance with directions on page 12.

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

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

When the duplex paper does not free itself readily from back of film, split the paper where possible, this will remove the hard outer surface of the paper, the remaining portion will soon become soaked and can then be removed easily by rubbing gently, *while immersed*, with the ball of the finger. This adhering of the duplex paper to the film is almost invariably caused by the use of too warm developer.

After developing a roll of film the apron must be wiped dry before developing another roll. The apron will dry almost instantly if immersed for a moment in very hot water.

Keep apron wound on axle "D" when not in use. Never leave apron soaking in 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" (see page 22) consisting of 1 Solution Cup and cover, 1 Transferring Reel and 1 Apron for each additional roll of film to be developed. The extra rolls of film may then be wound on to Transferring Reels as previously described and immersed in the Solution Cups.

Preparing the Developer.

We recommend the use of Pyro. The Kodak Tank Developer Powders, put up by us, are prepared especially for use with our film and the Kodak Film Tank, and are made from carefully tested chemicals.

Put four or five ounces of lukewarm water into the Solution cup and dissolve in it the contents of the large package. Fill the cup with cold water to the embossed ring—not to the top. Now dissolve the contents of the small package in this solution and the developer will be ready. The temperature of the developer should be 65 degrees Fahr.

If some of the contents of the small package stick to the paper, dip the paper into the solution to remove.

The developer must always be mixed fresh and used for only one roll of film.

Short Development.

If it is desired to shorten the length of development, equally good results may be obtained by using two pairs of the powders and developing for ten minutes.

Developer Formulae.

Those who wish to prepare their own developer may do so, but care must be exercised in securing absolutely pure chemicals and correct weights.

FOR 20 MINUTE DEVELOPMENT.

3½ INCH TANK.

22 grains Pyro.

44 grains Sulphite of Soda, desiccated.*

44 grains Carbonate of Soda, desiccated.*

Dissolve the chemicals in order named, in five or six ounces of lukewarm water, then add cold water to fill tank to embossed ring.

5 AND 7 INCH TANK.

30 grains Pyro.
60 grains Sulphite of Soda, desiccated.*
60 grains Carbonate of Soda, desiccated.*

Dissolve the chemicals, in order named, in five or six ounces of lukewarm water, then add cold water to fill tank to embossed ring.

FOR 10 MINUTE DEVELOPMENT.**3½ INCH TANK.**

44 grains Pyro.
88 grains Sulphite of Soda, desiccated.*
88 grains Carbonate of Soda, desiccated.*

Dissolve the chemicals, in order named, in five or six ounces of lukewarm water, then add cold water to fill tank to embossed ring.

5 AND 7 INCH TANK.

60 grains Pyro.
120 grains Sulphite of Soda, desiccated.*
120 grains Carbonate of Soda, desiccated.*

Dissolve the chemicals, in order named, in five or six ounces of lukewarm water, then add cold water to fill tank to embossed ring.

TEMPERATURE OF DEVELOPER 65° FAHR.

* If crystals are used, double the quantity.

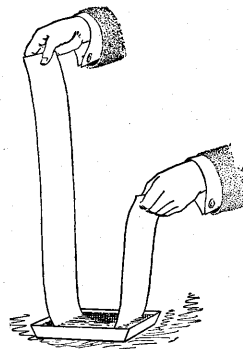
NOTE—Avoirdupois weight is the standard used in compound-
ing photographic chemicals.

The Fixing Bath.

Provide a box of Kodak Acid Fixing Powder which should be prepared as per directions on the package. Put this into a tray or wash bowl. When the powder is thoroughly dissolved add to the solution as much of the Acidifier, which you will find in a small box inside the large one, as directions call for. 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 as shown in the cut, holding one end in each hand. Do this three or four times and then place one end of the film in the tray, (8x10 inches is a good size) still face down, and lower the strip into the solution in folds. 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.

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

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

Water,	-	-	-	-	16 ozs.
Hyposulphite of Soda,	-	-	-	-	4 ozs.
Sulphite of Soda (desiccated)	-	-	-	-	¼ oz.

When fully *dissolved*, add the following hardener :

Powdered Alum,	-	-	-	-	½ oz.
Citric Acid,	-	-	-	-	½ oz.

This bath may be made up at any time in advance, and can be used as long as it retains its strength, or is

not sufficiently discolored by developer carried into it to stain the negatives.

Washing.

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

Drying N. C. Film Negatives.

When thoroughly washed, snap an Eastman Film Developing Clip on each end of the strip and hang it up to dry or pin it up. Be sure, however, that it swings clear of the wall so that there will be no possibility of either side of the film coming in contact with the latter.



Drying with
Clips

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.

Over Development.

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

In such cases the negative is very strong and intense by transmitted light, and requires a long time to print.

The remedy is to reduce by use of Eastman Reducer, or by the following method:

REDUCER.

First soak negative 20 minutes in water, then immerse in:

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

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

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

Should any yellowness or staining appear in the reduced negative, it may be removed by replacing same in the Acid Fixing Bath for a few minutes.

Under-Development.

This defect would be caused by a mistake in removing film from the developer too soon, by using solutions too cold, or by an error in compounding chemicals.

It is obvious that neither of these defects will occur if instructions for tank development are properly followed.

The remedy for under-development is to intensify by re-development, or the following method:

Intensification.—After fixing and thorough washing, lay the film while wet, in an empty tray and pour over it sufficient intensifier to fully cover it; 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.

Intensifier may be purchased already prepared or the amateur may put it up himself, using the following formula :

INTENSIFIER.

No. 1, 75 gr. Bi-chloride of Mercury (corrosive sublimate)		
Poison,	-	5 oz. Water.
No. 2, 112 gr. Iodide of Potassium,	-	2½ " "
No. 3, 150 gr. Hypo-sulphite of Soda,	-	2½ " "

Dissolve separately and combine No. 1 with No. 2 and the resulting mixture with No. 3.

INTENSIFICATION BY RE-DEVELOPMENT.

While the method of intensification by re-development is comparatively new, Velox and Royal Re-developer for Sepia tones on Velox and Bromide prints is a most effective and simple means of intensifying film negatives.

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

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

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

Preparing the Cartridges.

For use with the Kodak Film Tank the cartridges must be specially prepared by sticking the loose end of film to duplex paper, which operation can be accomplished in the following manner.

Just before you are ready to develop (holding spool with the *unprinted* side of the duplex paper up) unroll

the duplex paper carefully until you uncover the piece of gummed paper which is fastened to end of film and is to be used as a means of fastening film to duplex paper. Moisten the gummed side of sticker evenly for about an inch across the end and stick it down to duplex paper, rubbing thoroughly to secure perfect adhesion. Wind end of duplex paper on spool again and the cartridge is ready to insert in machine.

At Your Option.

Some photographers prefer to wet the surface of their films or plates before applying the developer, in order to insure an even flow of same and avoid the possibility of streaks. This can be readily done with the Kodak Film Tank. Instead of putting the Transferring Reel immediately into the developer, first fill the Solution Cup with clear, cold water. Immerse the Reel in this for a few seconds—pour off and proceed as described with developing.

In the Tropics.

Travelers to tropical or semi-tropical countries will find their film ruined by the excessive dampness unless they make proper provisions against it.

The only safe method is to put up the film in hermetically sealed tin cans (one spool to a can) and leave them in the cans until ready for use. After exposure they must be *promptly developed*. There is no use in returning them to the can after exposure, as they are likely to have absorbed sufficient moisture during exposure to ruin them unless they are promptly developed.

Kodak Cartridges will be packed in sealed tubes on request at 5 cents each.

TIME AND TEMPERATURE FOR TANK DEVELOPMENT.

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

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

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

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

A Short Cut.

Sometimes when one is traveling, a glass graduate for measuring developer is more or less of a nuisance, on account of its bulk and the liability of breakage. This can be dispensed with by half filling an ordinary tumbler with water (about 75° temperature) and dissolving the developer powders therein.

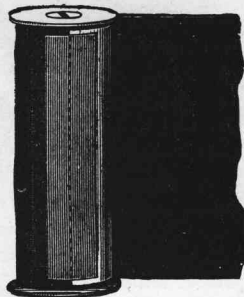
Pour this into the tank and add *cold* water to embossed ring. By previous experiment without the chemicals, you can find out what proportions of the lukewarm and cold water to use, so as to get the proper temperature, 65°.

The fixing bath may also be prepared without a graduate. The average tumbler holds approximately eight ounces; you can, therefore, get your fixing bath nearly enough of the right strength by its use, as a little variation in the strength of the solution makes no difference, provided only that you fix for five minutes after the milky appearance has disappeared from the back of negatives.

Special Directions for Developing Cartridge Roll-Holder Films in Kodak Film Tank.

Cartridge Roll-Holder Film may be developed in the Kodak Film Tank by following these directions:

Place the small metal adapter, which comes with Film Tank, on the pivot on the movable side of spool carrier. Then place the cartridge in carrier so that the duplex paper will draw from the bottom instead of from the top. This is exactly opposite to the way in which a Kodak cartridge is inserted.



All Cartridge Roll-Holder Films have a piece of gummed manila paper on the loose end of the film. To prepare same for Film Tank unroll the duplex paper until the manila paper is reached. Moisten the gummed side and paste it to duplex paper as shown in cut. Again wind paper on spool.

The cartridge is now ready for insertion in the Film Tank box.

With the Roll-Holder Cartridge the "Stop" warning is not printed on the duplex paper, but instead the operator is to "Stop" when about one inch of the manila paper, with which the end of the film is fastened down, appears.

From this point proceed in the same manner as with a Kodak Cartridge.

Be Sure to Use Pure Chemicals.

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

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

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

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

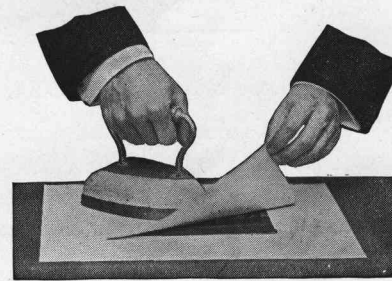
This seal stands for the highest purity. Be sure it's on the package before purchasing.



EASTMAN KODAK CO.,
Rochester, N. Y.

PRINTS DO NOT CURL

WHEN MOUNTED WITH

**Kodak Dry
Mounting Tissue***Just the Tissue and a Flatiron*

Dry Mounting Tissue is incomparable for album work. The leaves lie flat with perfect adhesion.

**EASTMAN KODAK CO.,
Rochester, N. Y.**

All Dealers.

Price List.

"3½ inch" Model B-2, Kodak Film Tank,	- \$5.00
Duplicating Outfit, consisting of one Solution Cup, 1 Transferring Reel and 1 Apron,	- 2.50
Kodak Tank Developer Powders, for 3½-inch Tank, per pkg. ½ doz.,	- .20
"5 inch" Model C Kodak Film Tank,	- 6.00
Duplicating Outfit, consisting of 1 Solution Cup, 1 Transferring Reel and 1 Apron,	- 3.00
Kodak Tank Developer Powders, for 5 inch Tank, per pkg. ½ doz.,	- .25
"7 inch" Kodak Film Tank,	- 7.50
Duplicating Outfit, consisting of 1 Solution Cup, 1 Transferring Reel and 1 Apron,	- 3.75
Kodak Tank Developer Powders for 7 inch Tank, per pkg. ½ doz.,	- .25
Kodak Acid Fixing Powder, per ½ lb. pkg.,	- .15
Do., per lb. pkg.,	- .25
Glass Stirring Rod Thermometer,	- .60
Eastman Film Clips, (nickel), 7 inch, per pair,	- .35
Do., 5 inch,	- .30
Do., 3½ inch.	- .25
Kodak Film Clips, (wooden), 5 inch, per pair,	- .15

EASTMAN KODAK COMPANY,
Rochester, N. Y.

Pin to a Card and Touch With a Match.

THAT'S ALL THERE IS TO USING

Eastman Flash Sheets.

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

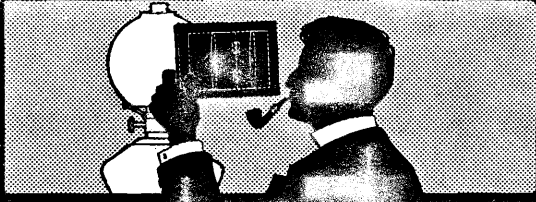
Clean, convenient, a minimum of smoke.

Price per package of $\frac{1}{2}$ dozen sheets

No. 1,	-	-	-	\$.25
No. 2,	-	-	-	.40
No. 3,	-	-	-	.60

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Rochester, N. Y.

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Prints by Gaslight

ROYAL VELOX

A paper with all the Velox simplicity, but coated on a mellow toned stock that adds breadth and softness to the picture.

When Sepia toned, with Velox Re-developer, Royal Velox has the delicacy and charm of an old etching.

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