

treated as a secondary operation. It is necessary to calculate the time, by the subject and effect you wish to produce. When any peculiar effect is to be produced, put only one proof in the bath at a time.

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#### THE PREPARATION OF NEGATIVES UPON GLASS BY ALBUMEN.

THIS preparation is based upon the property which the albumen has, by the application of heat, to become completely insoluble.

It is to the nephew of M. Niepce, of St. Victor, that we owe the application of this substance to Photography upon glass. It was he who first continued, in another manner, the experiments on glass made by his uncle, and arrived at satisfactory results. It is to his incessant efforts, and the frankness with which he published his discoveries, that we owe the fine proofs obtained in the present day. The negative proofs upon glass are distinguished by a fineness approaching very near to those obtained by the daguerreotype.

For the reproduction of engravings, pictures, sculpture, and landscape, the result is complete. The only thing to be still desired, for portraits, is an increase in the celerity of the operation.

It is, nevertheless, to be hoped that, with the united concurrence of artists and amateurs who are at present occupied

upon this subject, we shall succeed in diminishing the time necessary for exposure to the light.

It is desirable that every one should publish frankly the fruit of his efforts, and there will evidently result immense progress and improvement.

PREPARATION OF THE ALBUMEN FOR GLASS.

TAKE 10 whites of eggs, very fresh, put them into a large basin, and dissolve in the liquid—

Iodide of Potassium*	. . .	4 grammes.
Bromide of ditto	. . .	50 centigrammes.
Chloride of Sodium	. . .	50 ditto.

Beat this mixture in a large dish with a wooden fork, until it is reduced to a thick white froth, then let it repose all night; the next day decant the viscous liquid, which has deposited, and use it for the preparation of your glasses.

For this purpose take thin glass, or, what is much better, *ground glass, on which the adherence is more perfect*, cut it the size of your camera frame, and grind the edges.

Before applying the preparation to the glass, take care to wash it well and wipe it dry with soft paper; place it then

* Iodide of Potassium	. . . .	1 dram.
Bromide ditto	. . . .	7½ grains.
Chloride of Sodium	. . . .	7½ grains.

upon a sheet of white paper and polish it perfectly with a piece of cotton, avoiding touching it with the hands.

The success of the proof is, in a great measure, due to the evenness of the coat of albumen, and the clearness of the glass.

To obtain this, place one of your glasses horizontally upon a fixing-stand, assuring yourself that it is on a level by a little water, and then pour on it an abundant quantity of the albumen; then take the glass in your hand and incline it gently every way, that the coating may be even; then inclining it to one corner pour off all the remainder of the albumen, so that there may remain only a very thin layer. Wipe the borders of the glass carefully with soft paper, and replace the glass upon the stand to dry, keeping it from the dust by the assistance of a card suspended above it.

At the moment of giving the bath of aceto-nitrate of silver, which is the same described under the second operation of negative paper (page 98), you expose your glass before a moderate fire, so as to take away completely every trace of humidity. This operation is very delicate, because the least stoppage in its immersion in the bath will operate on the sensitive coating, and cause irregularities which nothing can remedy.

To obtain this instantaneous and regular immersion, I make use of the following apparatus, composed of two glasses, between the borders of which are cemented two bands of glass of two centimetres wide, and one between the two of one and a half centimetres, so disposed as to form in the middle a groove into which the plates to be prepared may easily be

passed. The best cement for the purpose consists of two parts of albumen, and one of white cheese, to which is added lime until it is of a proper consistence. When the cement is dry, fill the instrument with vinegar, which will coagulate the albumen and render the cementing perfect. This apparatus has the form of a daguerreotype box, with only one groove. You pour into this box the two-thirds of aceto-nitrate silver (page 98), and you let the glass slide into it with a single movement, taking care that there shall be no stoppage. After having left the glass to soak two or three minutes in the bath, you withdraw it, and wash it perfectly with distilled water, then leaving it to dry in a complete obscurity. The glasses thus prepared will keep one or two days before being exposed in the camera. You develop the image as that of negatives on paper, by putting it into a warm bath of gallic acid, containing, at most, one-tenth in volume of aceto-nitrate silver.

It requires one or two hours, or even more, to develop the image. When it is well out, fix by the method already indicated for paper (page 108).

To obtain a positive proof, it is sufficient to apply on the negative proof a sheet of common positive paper, or, better still, a sheet of positive albumen paper, which I will describe hereafter.

You then put it in the pressure-frame, placing above it a piece of black cloth pasted on one side of a thick sheet of glass; then shut the frame, giving to the proof a slight pressure; after which, expose it to the light. In order to follow its action, you may just raise it by one corner of the glass, to

judge of the tint which the image takes ; when you think it sufficiently exposed, take it out of the frame and fix it the same as the positive paper.

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#### PREPARATION OF ALBUMEN PAPER FOR THE NEGATIVE PROOF.

THE same preparation of albumen and the same quantities apply also perfectly upon paper, but it requires great caution to have it equal.

The proof that is thus furnished is remarkable for the depths of its blacks and transparency of its lights. Almost all papers, when they are not too much spotted with black points, will serve by this method and give good results.

I obtain also a delicacy of execution which is almost as well defined as the proofs on glass, and which is incontestably more artistic. Pour the solution into a dish, placed horizontally, taking care that there is no froth ; then take the paper that you have chosen and wet it on one side only, beginning at the edge of the dish which is nearest to you, and the largest side of the sheet, placing the right angle on the liquid, and inclining it towards you ; advance it in such a manner as to exercise a pressure which will remove the air-bubbles. Place before you a light, so as to be able to perceive the bubbles and to push them out if they remain.

Let the leaf imbibe for a minute, at most, without touching

it; then take it up gently, but at once, with a very regular movement, and hang it up by the corner to dry.

You prepare thus as many leaves as you wish in the same bath, taking care that there is always about a quarter of an inch in depth of the solution in the dish; then place your sheets (thus prepared and dried) one on the other between two leaves of white paper, and pass over them several times a very hot iron, taking out a leaf each time; you will thus render the albumen insoluble.

The iron should be as hot as it can be without scorching the paper.

Then make use of this negative paper exactly like the first paper named, only great attention must be observed that the immersion in the aceto-nitrate bath is instantaneous, and that the air-bubbles are immediately driven out; for every time you stop, you will make stains the same as on glass. It is also necessary to heat moderately the gallic acid.

One of the best services rendered by the albumen to photography is, without doubt, its application to the preparation of the positive paper, to which it gives a brilliancy and vigour difficult to obtain by any other method.

## PREPARATION OF ALBUMEN ON POSITIVE PAPER.

TAKE white of eggs, to which add the fifth part, by volume, of saturated solution of chloride of sodium, or what is still better, hydrochlorate of ammonia; then beat it into a froth, and decant the clear liquid after it has settled for one night.

Pour out the liquid into a basin, and prepare your positive paper on one side only, by the same method as in the preceding chapter or negative paper; dry it and pass the hot iron over it in the same manner as directed.

The paper thus prepared is very highly varnished. If you desire to obtain less gloss, add, before beating the eggs, the half or more of distilled water containing equally a fifth of water saturated with hydrochlorate ammonia. You may thus modify at pleasure the degree of brilliancy of the proof. The mixture of half albumen and half water is excellent, it gives much fineness and firmness without giving the proof a varnished appearance little inartistic.

You may keep this paper some time before you apply the nitrate of silver to it, as it does not spoil.

When you desire to use it, put the albumen side on a bath of nitrate of silver, containing one part of nitrate by weight, to four of distilled water, and let it imbibe four or five minutes; then hang it by the corner to dry, and finish it as I have already described in the first positive paper.

This paper gives much depth to the blacks, and great brilliancy to the whites. In leaving it a shorter time on the

nitrate bath (about one minute), and using Whatman's paper, you may obtain a reddish purple tint very harmonious. Canson's papers, and usually all those which contain much amidine, give black tints.

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## OBSERVATIONS RELATIVE TO OBTAINING VIEWS.

WHEN you desire to take a view, be careful not to make the image too large, and that your perpendicular lines are true.

The distance from the object to be copied should be about one quarter of the whole scene, if you would obtain a picture free from any distortion.

When you wish to take the whole scene with a single lens, it is better to employ the half-plate size.

It is also well to get conveniently near to the object to be copied, as it requires a longer time in the camera when the distance is great: vegetation and other green objects generally require a longer exposure.

Care must be taken that the sun's rays do not strike upon the object glass of the camera when taking a view, as it would interfere with the clearness of the image.

When you wish to operate in the country, it is quite necessary to take with you everything you may require for use.

The following list of articles composed my travelling apparatus: