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A POSSIBLE AID TO PERMANENCE FOR EMULSION PRINTS.

By D. BACHRACH.

As long as albumen paper has been so largely displaced by the emulsion print-out papers, a great evil in my opinion, anything which may make it possible to give as much permanence as we know the albumen prints to have, will be given a hearty welcome.

From the standpoint of experience, I was one of those who doubted the permanence of the work on print-out emulsion papers, and my predictions have, unfortunately, been fully realized. I knew that nearly all the old prints on opal glass, made with the collodio chloride emulsion, had faded in a comparatively short time, and saw no reason why the same emulsion on Coryto paper was any more stable. It is somewhat more so, but only in degree. Two years of experience with gelatine papers convinced me that this form of emulsion was still more open to objection. And there does not seem to be a great deal of difference between the prints toned in a combined bath or those treated in separate toning and fixing solutions. The weakness seems to be where I pointed it out long ago. That is, that the amount of silver reduced in a print on emulsion paper, by the action of light, is extremely small, and so if even the entire image underwent the process of substitution in the gold toning bath, it would still be of great tenuity, and incapable of standing the same amount of adverse conditions as prints on plain salted or albumenized papers, in which the reduction is much greater. But the image is never more than stained a little, speaking in a comparative sense, by the action of the gold on the emulsion print, and if any method can be devised to make the

process of substitution by the gold or platonic salts thorough in the entire body of the silver reduced by the action of light, without losing the desirable qualities of the print, the use of the emulsion papers would probably be attended by at least the same amount of permanence possessed by the old style of prints. In the case of the matt collodion papers, printed strong and thoroughly reduced in the platinum bath, we already come near the ideal, so far as permanence in emulsion prints is concerned. But this still leaves the glossy papers out in the cold, so to speak. Some twenty-five years ago I made a series of experiments, part of which were published, I believe, in the *Philadelphia Photographer*, which resulted in a practical method of toning plain salted papers while printing, and completion thereof in the fixing bath by adding from one to two grains of neutral chloride of gold to each ounce of the salting solution, and afterward treating such paper as usual, except omitting the toning. The drawback was that the paper had to be used in a short while after salting, the gold, in time, staining the sizing of the paper. But the print was thoroughly toned through and through, and was unquestionably stronger against the action of deleterious elements. My experiments with albumenized papers, though long continued, were futile, or rather lacked complete success on account of the nature of the compound formed by the mixture of the gold and albumen.

It seems now, however, that someone has succeeded in making a collodio chloride emulsion with the addition of the gold chloride, which is claimed to accomplish the object of toning while printing, as I did with plain salted paper. At least a patent has been taken out for that process. The emulsion is made precisely the same, so far as I can see by the formula, as any other collodio chloride emulsion, the only addition being about one grain of neutral chloride of gold to each ounce of emulsion. It would be worth while for experimenters to test this method thoroughly, for the baryta coating of the paper, which forms the base of the sensitized compound, is not liable to staining by the gold as paper is, nor is collodion such a difficult element to handle in connection with gold as albumen. My experience leads me to believe that if this gives good results in practice, the prints will be far more permanent than those now made, and it will probably give agreeable tones with thorough toning, which the present method does not. The regularity of tone and simplicity of operation would, it seems, become a necessary consequence. To a chemist the action does not seem compatible with the theory of toning as understood by us, but in the case of the plain salted paper the results certainly justified the conclusion that the action is similar. It certainly requires three or four times the amount of gold to a print than our present method, and if that is used entirely in substitution

in place of the reduced silver, it must necessarily make a more permanent image. I trust that this method may not prove to be merely theoretical, as so many patented processes have, and the experimenters of our profession ought to carefully test it and report results. The manufacturers of emulsion papers are more vitally interested, in a pecuniary sense, in the permanence of emulsion prints than photographers, and therefore ought to adopt the method herein proposed, if practicable; for photographers can always fall back on albumenized and plain salted papers if convinced of the instability of emulsion prints. In conclusion, I will say that, in my opinion, no method could make gelatine print-out papers permanent and reliable, as there are elements of trouble introduced by their use which are not present in the collodion papers. At this time we are using in our establishment albumen paper for glossy prints and "Aristo Platino" and the regular platinum papers for the matt surface pictures. Nothing could induce us at present to take up again the glossy print-out papers, unless this new method should remove the objections I have enumerated.

SMILES.

In selecting the title of this sketch we did not have in mind the "smile" that the average Kentuckian might conclude would be the most fitting thing to write about; and, for fear lest this pleasing topic should take too deep root in the brains of some of our friends, we hasten to make this curt remark—"there are smiles, and smiles"—and whenever the word is used in the following lines let it be perfectly understood that the facial smile pure and simple, "child-like and bland," is all that we have in mind.

Now, let us take a smile. How many ever cultivate facial expression? I mean those in business life, who have to do with the every-day cares and business troubles. It is not at all uncommon to feel that we have no reason for looking happy or making any special effort to appear pleasant to those of our customers whom we wait upon during one of our dark days. We are prone to brood on our own dissappointments, and, what is worse, to let it show plainly on our faces when talking to our customers, and soon get the reputation of being surly or "grouchy." A man who comes in contact with the public in his every-day business must be an actor, and the actor of greatest ability makes the best impression upon his customers. It should not be considered hypocrisy, and the employee as well as the proprietor should practise facial expression and become sufficiently expert in the trick, so that the

moment a customer enters his door he can lay aside his worried look, and go forth to meet him with a bright, engaging expression on his face, as if he had long been waiting for this opportunity to serve him, and was prepared to exert himself to the utmost to see that the customer got what he wanted.

And when one has an established trade, make your customers feel at home. Try to remember your customer's name, and when he comes in address him by his name, and he will at once feel that he is of some importance to have been remembered, and be he ever so modest, his vanity will surely be tickled. Have not you yourself gone into a store, for, say the second or third time, and when the clerk steps forward and says: "How do you, Mr. Smith?" you straighten up and feel that you had some right to come in, and soon you find that whenever you want anything that might be had in that particular store, you will put yourself out of the way to go around there, because, as you say, "they know me there." You like to buy of a clerk who recognizes you, and calls you by name with a smile.

When you see a customer come in, think of the name, and what he might come for, and for instance say: "How do you do, Mr. Jones? Have you come to see your proofs? Well, I have something good to show you—they came out better than I expected." And it is ten to one that even before he sees the proofs he has already decided to accept them, or not to raise any serious kick.

Had you been glum he might have looked at the proofs with suspicion, and judging from your expression, think that if you were not satisfied with them he must find something to kick about too.

Also, when the customer comes for his finished pictures, don't throw them out as if they were heavy merchandise; pick one up, carefully dust it, as if it was of great value, hold it up in a good light and look as if you were thoroughly pleased with the effect; put a nice inclosure on it, in order that so precious a piece of work might not become scratched; let your customer become imbued with a profound respect for your efforts, and you will find that complaints and undelivered work will become appreciably less.

Practise this; don't overdo it until it becomes a burlesque, but endeavor to have it seem perfectly natural, easy and graceful.

There is one point in the game of landing a customer where many fail, and where few succeed with grace, still keeping firm hold on the good will of the customer.

It is the moment when you have to tell your customer to pay in advance. How many have stumbled over this stone? It requires the greatest skill and most consummate suavity to get full pay from a touchy customer and not offend him.

Approach him from the side, and use the never failing "smile" that we have just been practising. Instead of bluntly saying:

"You must pay in advance," ask him politely, "Will you pay all now, or part down, and the rest when the work is finished? Explain the rules honestly, but plainly and gentlemanly, and you will always win the respect of your customer, and be much more apt to get his money—which is more to the point.

And under the skylight! Some of our operators—and generally the inferior ones—seem possessed with the idea that if you are harsh and imperative with the sitter he will get the impression that you are a genius, especially if you affect some peculiarity of dress. While it is true that this method has been worked successfully by a few great operators, it takes a genius to make it effective, and this country has very few geniuses. One man succeeds at it where a hundred men fail. But while it is out of the sphere of the most of us, we have another recourse left us, which is equally if not more effective with the general trade. It is our old friend the "smile." We have now been practising it for some time in the reception room; and in the operating room we find it even more valuable. It puts the awkward girl at ease, quiets the children, and if we have a few good jokes tacked up on the dark-room door that we can use occasionally in conjunction with the smile, we find that the patient forgets himself and can be manipulated much more readily and will work with you in more perfect harmony.

Who requires more patience than an operator? Any one who has worked all day under a hot skylight dancing, singing, snapping one's finger and trying to look and act cheerful while under the most terrific strain of "taking baby's picture," will readily agree with me that patience is a virtue, and as such does not receive the proper reward. But it is all in the business, and he who can't smile, and who has no patience, is generally not the successful one.

There is not a place in the photograph gallery where the smile is not an important item of stock in trade—unless it be in the dark-room—and it is an item which we cannot afford to overlook or neglect.—The Trade News.

A Neat Way of Finishing a Negative.

Where a number of prints from one negative are to be printed, particularly where the subject is intended to be topographical rather than artistic, it is a very neat plan to give the negative an edging—say, one-eighth of an inch wide—of black varnish. This will ensure a clean white border round the print, and if the title be scratched with a needle through the black varnish, the letters will appear in good black outline on the white border.—G. E. B. in Photographic News.

MOUNTS.

By XANTHUS SMITH.



In the earnest effort that is now being made in every department of photography to attain as much real excellence as possible, the manner of mounting photographs is receiving its full share of the attention. In the earlier days of the art, little care was bestowed upon the subject of mounting, and if a simple white card could be secured, it was all that was considered necessary for the support and display of the finished print.

The great variety introduced in the modes of printing has seemed to demand a greater attention to the manner of supporting and exhibiting the prints. With the incoming, for instance, of the platinum process, there was so great a similitude to the mezzotint engraving that a support which would be of the character of the border of a fine engraving with its wide margin and impress on india paper, seemed quite appropriate. Then came along the

gelatine and collodion surfaced papers, with their general evanescence, and prevailing foxy tones, and certainly demanding particular attention to the character of the mount, in order that they might be brought out to the best advantage, and yet not over-powered. And now we have the aristo-platino and carbon processes giving us results when best managed very much like the choicest engravings of earlier days, and deserving all the good taste and skill in the mounting which can be bestowed upon them.

The mounting of photographs is to a considerable extent a matter of taste; for, as we all know, what strikes one person as agreeable and appropriate, may not be in harmony with the ideas and feelings of another. But there are a few broad principles governing the matter, which should be understood, and can not be departed from without offending the general run of persons of good taste. With regard to size, as a rule, however inconvenient or expensive it may be, the more margin we allow surrounding the print the more appearance of importance and value the work will have. With regard to color, while it occasionally happens that a white mount is the best of all, it will more often be found that a

tint below the high lights of the print will be preferable, because by playing second to the print in this respect it will give it more importance. Delicate shades of gray invariably show photographic prints to advantage. But great care and a refined judgment of harmonics, are required to accommodate precisely the tone of the mount to that of the print. It is a mistake to suppose that the mount should contrast the print strongly. When attempted it will generally be found that they war with each other; as, for instance, when we place a sepia print upon a slaty or blue-gray mount. The mount should support and echo the prevailing tone of the print. A warm print requires a much warmer toned mount than a cold black and white print. Think of a black and white print upon a terra cotta mount, and yet we have seen such. Be it remembered though that sometimes slight contrast is necessary in order to avoid tameness. In order to give spirit or attractiveness to the whole, the mode at present much adopted of having a narrow border of white immediately surrounding the print is excellent. Cool prints upon stone gray mounts with this slight interposition of white have a very attractive effect. But when the amount of white border is increased, the effect is not so good, as the mount immediately becomes too conspicuous, and begins to war with the print. Borders or mats with exaggeratedly rough surfaces are not in good taste. They may attract for a moment as a novelty, but will not hold a lasting place in the estimation of persons of good judgment.

BROMIDE PRINTS BY CONTACT PRINTING.

By R. W. GODWIN.

During the winter months bromide paper is an especially desirable process for the photographer, because of the facility it affords one of making his prints in the evenings as well as in the day-time. Probably no photographic printing paper has received more attention from the manufacturers during the last couple of years, so that in place of the old soapy-surfaced bromide, the paper is now procurable in all manners of tints and surfaces, and even in "hard" and "soft" varieties, thus giving us an adaptability to almost any negative. Then the introduction of the newer and cleaner developers, doing away with ferrous-oxalate and its attendant clearing bath, is a real boon. The great fault to be found with bromide work is the chalk and soot character of the results produced, with clogging and want of transparency in the shadows. This must be avoided by care in exposure and development, as a soft image

should be aimed for with no absolute black in the print at all. However, there are special after-treatments for inferior prints, such as I shall describe later.

EXPOSURE.—This is different with almost every make of paper. There are just one or two rules to be observed. Thin and weak negatives should be printed far from the source of light, and hard and dense negatives nearer. This gives more plucky prints from the first type, and more harmonious ones from the latter. Remember that exposure varies as the square of the distance from the light; thus a negative which requires ten seconds at a foot distance, would require 2^2 or 4 times that exposure at two feet distance; and 3^2 or 9 times the exposure at a yard from the light. Anyhow, having calculated as nearly as possible the exposures required with the negatives to be printed, cut a piece of the bromide paper into strips, and by an actual exposure on the strips test the negatives, which is a most satisfactory way of working.

DEVELOPMENT.—Either amidol or metol may be used; I recommend metol. This gives the softer prints of the two, amidol giving rather blacker results. Metol developer:

Metol	60 grains.
Sulphite of soda.....	500 “
Potassium carbonate.....	100 “
Potassium bromide.....	10 “
Water.....	20 ounces.

Dissolve the metol first, and so on in the order given. In place of the 100 grains of potassium carbonate, 120 grains of sodium carbonate may be used; the potassium salt is, however, quicker in action and gives better blacks. The amidol developer is very similar to above formula. Amidol developer:

Amidol	60 grains.
Sulphite of soda.....	500 “
Potassium bromide.....	10 “
Water.....	20 ounces.

Dissolve the sulphite first, then add the amidol and bromide. With these developers it is very important that the sulphite of soda should be pure; samples that have a white crust and have gone almost to powder should be rejected. It is best to make up the developer twenty-four hours before using; the solution then has time to get still, and air bubbles are not so likely to form on the print during the development. Filter the developer through cotton-wool before use. I find there is always a slight sediment in making up the metol solution. Be very careful to allow no trace of hypo or pyrogallic acid to come in contact with the prints during development, or stains will certainly ensue; care must be taken

with the fingers when transferring to the various dishes. Having exposed the paper, soak it in water for about a minute, then develop until the picture is visible as required when finished; development is then to be stopped. The developer may be used four or five times, but not more, or it will become weak or stain the paper.

FIXING.—Immediately development is complete, wash the print in a bucket of water; then fix in hypo one pound, water eighty ounces. Then wash for an hour and a half, and before hanging up to dry, go over the surfaces of the prints carefully with a damp tuft of cotton-wool to remove any scum, etc., that may be on them. A thick paper, of course, takes longer washing, to eliminate the hypo, than the thinner papers, and as it is important to be able to tell when this is accomplished, for questions of permanency, and especially for uranium toning, here is a test for same. Make a stock solution thus:

Potassium carbonate.....	10 grains.
Potassium permanganate.....	1 "
Water.....	10 ounces.

Take a test tube of this solution, and let the droppings from a print fall into it. If the solution then turns color and afterwards becomes colorless, hypo is present; if the solution retains its pink color, the hypo is washed out properly.

Now for the after treatment of bromide prints. There are three simple methods of toning which yield fairly permanent results—viz., gold, hypo and alum, and uranium.

(1) GOLD TONING SOLUTION.—

Sulphocyanide of ammonium.....	30 grains.
Gold chloride.....	2 "
Water.....	10 ounces.

The sulphocyanide must be dissolved in the water first, and the gold added afterwards, as in the case of P.O.P. toning baths. Do not reverse this operation. By soaking the print in this solution a good blue-black is obtained in the shadows with gray half-tones; after toning wash as usual.

(2) HYPO AND ALUM TONING SOLUTION.—This gives a beautiful sepia tint, and is very easy to work, and a great favorite of mine. Dissolve ten ounces of hypo in seventy ounces of boiling water; then add gradually one ounce of ground alum, stirring all the time. The solution is the color of milk. The method of using it is as follows: Immerse the print in the solution when cold (using a porcelain dish), and allow to soak for about half-an-hour. Then stand the dish over a saucepan of water on the fire or stove, thus heating the toning solution by steam. Do not let the temperature

of it get beyond 120° F., or blisters may occur. The print is left until the sepia tone is visible as required; then allow solution to become cold, and afterwards wash the print as usual. The bath should not be thrown away, but may be used over and over again.

(3) URANIUM TONING BATH.—The following process may be adopted. Make the following solutions:

A.	
Uranium nitrate.....	8 grains.
Acetic acid.....	40 minims.
Water to.....	1 ounce.
B.	
Potassium ferricyanide.....	8 grains.
Acetic acid.....	40 minims.
Water to.....	1 ounce.
C.	
Ammonium sulphocyanide.....	½ ounce.
Water.....	10 ounces.

Immerse the bromide print in a bath composed of twenty minims of each A, B, and C, made up to two ounces with water. When the bath is exhausted, and its action ceases, if the required tone is not obtained, add a few more minims of A, and, having washed the print with water, immerse in the bath again, or make up a fresh bath, and so on until the desired warmth of tone appears. Then place print in a bath of C one ounce, water one ounce—which will help discharge the yellow coloring of the whites—and a quick washing after is all that is required; prolonged washing will remove the deposited uranium. If the toning is not satisfactory, immerse the print in a five per cent. solution of ammonia or carbonate of soda, when the uranium will be quickly removed, and the toning can be performed over again. Always filter the solution through cotton-wool before use. It is important, in using this bath, that the hypo be thoroughly eliminated from the bromide print before toning.

The above three toning baths have each their special applications to certain classes of prints. The first is of use where a disagreeable color of image has been produced when otherwise the print is a good one. If a greenish-black is obtained on development, or in the case of a blue-black tone being required to suit a certain subject, it may be used. The second process is useful in case of a print being over-developed, and therefore of too dark a tone. In this case it acts as a slight reducer, giving a beautiful brown tone, and imparting transparency to the shadows. The uranium process gives warm, even to red, tones, and, as it acts as a slight intensifier, is conveniently used on a flat or under-developed print. As long as detail is present, however weak, contrast and density will come with the toning; it is perhaps a more difficult

process to work than the other two, and does not give such permanent results, but the tones to be obtained by it are really very beautiful.

Bromide prints, if on matt paper, may be touched up and the shadows lightened by rubbing slightly with india-rubber eraser and pumice-stone powder, or touched up with lead, etc. ; the enamelled paper may be squeegeed to glass and a high polish obtained as with P.O.P. Having used a quantity of thick, smooth, platino-matt paper lately, I wish to add a word or two to say how well prints look on it when masked about half an inch all round so as to obtain a clear margin ; and, besides, in large sizes being suitable for the portfolio, suggest that it is a cheap and artistic way to make cards for the holiday season. The paper is like thin card, requires no mounting, and when the mask has been adjusted to the negative and the exposure determined, it is surprising how quickly one can rattle off any number of prints.

COPYING REFLECTIONS.

It is said the mirage has been photographed, and if the photographs are at all like the descriptions of this optical illusion a series of them would be both pleasing and beautiful, for the reflections from lakes and other smooth surfaces are sometimes more attractive than the sources from which they come. There exists an old Chinese myth that the reflections in water could be fixed by freezing. David Winstanley was inclined to believe in the possibility of such a feat. He even gave an instance of the images of a table and other things being found in a block of ice. Although we cannot fix reflections in the bodies from which they are reflected, it is an easy matter to fix them upon a photographic plate. In copying the reflections from a mirror many additions may be made by painting upon the surface of a mirror itself. This dodge is largely used by the makers of photo-mechanical blocks, and is not generally known. Supposing a reproduction is wanted from a picture in which something is to appear not in the original, say a book, flowers, a dog, or even a background. The original is first reflected from a mirror, the desired addition is next painted upon the surface of the mirror in the exact position it is to occupy in the reproduction. The whole is then copied, and in the negative the painted objects come out as if actually in the original. Many of the curious combinations now seen in some of the illustrated journals making use of photo-mechanical processes are explained by this system. It is obvious that a similar method could be utilized for cutting portions out when copying, and it is strange that it is not in more general use.

HOW TO MAKE AND USE A GOOD DEVELOPER.

The following pyro-soda developer is said to be one of the simplest and best in use at the present time. It keeps well, so had better be made up in Winchester quarts in the following bulk :

A.	
Water	80 ounces.
Sulphuric acid	1 drachm.
Pyro	1 oz. (as bought).

Add the sulphuric acid gradually to the water, to avoid too rapid generation of heat, and then add the pyro.

B.	
Washing soda.....	6 unces.
Sulphite of soda.....	8 ounces.
Water	80 ounces.

For use in normal exposures mix equal parts of A and B.

This developer will keep several hours after combining the two solutions, and from three to six plates can be developed with the same solution.

The negatives become more intense after the first, so that fresh developer should be used to develop a plate on which a short exposure has been made ; old developer will be better adapted to fully exposed plates and will yield better density.

An excellent method of working where the exposures are nearly uniform is to use a mixture of old and new developer, say three parts of old to one of new ; or to mix old and new in different proportions as the exposures vary. In that way the intensity of the negative may be kept under perfect control, if we bear in mind the fact that the new developer tends to rapid development and much detail, while the old solution tends towards slow development and density of the high lights.

The temperature of the developer is of great importance. The warmer it is, the more rapid will be the chemical action and the quicker will the plate develop. Warming the developer makes the negative less intense in contrast, because the shadows come up before the high lights have time to gain density. Therefore, for extremely brief exposures, the developer should be warmed up to 85° F. This will give the greatest possible amount of detail in the shadows ; but a further increase of temperature would probably result in fog.

Old developer when warmed works as freshly mixed does when cold. The best temperature for normal use is about 70° F.

The pyro in the mixed developer begins to decompose after a short time, and a scum is apt to form on the surface of the liquid in the developing dish. This should be removed by straining or filtering, for if it becomes mixed with the developer it is liable to adhere to the film in small patches, and cause spots and pinholes in the negatives.

Small transparent spots are also sometimes caused by dust on the plate either before or after exposure ; therefore, dust the plate carefully with a soft camel's hair brush before exposure, and after, if there is any dust upon it. Avoid the use of a stiff brush for this purpose, as it is likely to be the cause of fine transparent lines on the negative.

If the developer is filtered clean and the tray is also clean, the negative will be clean.

After development, the plate should be well washed and then immersed in a fixing bath composed of four ounces of hypo to each pint of water. The negative should be allowed to remain in the fixing bath at least five minutes after it is quite clear and apparently fixed, otherwise the shadows are liable to change color under the influence of light, owing to the amount of invisible silver remaining in the film.

If a very clear negative is required, it may be immersed for ten minutes (after fixing and well washing) in a bath made by dissolving an ounce of pulverized alum in a quart of water. It should then be thoroughly washed in running water for at least thirty minutes.

After the final washing, the film side of the negative should be gently wiped (while under running water) with a wad of wet cotton wool. This will remove the adherent particles of matter that have settled from the hard tap water, and so ensure a brilliant-surfaced negative. If this precaution is neglected, the film is liable to be rough, and likely to attract particles of silver from the printing paper when in contact.

The best way to dry the negatives is to hang each one diagonally between two nails driven into the wall of a room.

Of course, the glass side should be next to the wall and the film side outwards exposed to the air.

One of our old-time photographers writes us that he has been lately switched off from pyro, and has in the last few months run almost the entire line of the newer developers without finding one that to him is perfect. He is anxious to see a discussion from fellow workers in this journal on developers and development. We shall be pleased to lend our pages for this purpose. Who will lead the way?

THE LIBRARY OF THE FUTURE.



According to Professor R. A. Fessenden hailing from Pennsylvania, it is possible to condense a whole library of 50,000 volumes into a box of one cubic foot measurement, by aid of the photographic camera. This invention is not of mushroom growth, for it has taken many years in collecting material and experimenting until it has been proved to the professor's satisfaction that his method is far cheaper than the cost of paper upon which the 50,000 volumes would be written or printed upon, also that it occupies but one per cent. of the time required in copying by hand.

By these various economies it is urged that it is within the bounds of possibility to reduce the largest reference library, such as the British Museum, to a very small bulk by this new invention. As an illustration of what may be accomplished by photography, the professor says that it would be a very easy matter to arrange the mechanism of a plate containing a German dictionary so that by the pressure of a couple of keys the page, commencing with any given letter, could be thrown upon a screen fitted up for the purpose.

It would be supposed that difficulties would at once arise as to correct focusing, expense of any special plates, as well as time required to put any object into a suitable condition to photograph, but all these, we learn, have been overcome, as a special camera is employed having a $1\frac{1}{4}$ -inch focus, and a lens of $\frac{1}{4}$ -inch aperture. As an illustration, suppose it is desired to copy a table which fills up a whole page of a technical journal, the paper is laid upon the desk, and the camera, which is small, is suspended on a bracket above the desk, and is focused so as to include the page. A plate holder is then put into the camera and exposed for ten seconds if the illumination comes from a lamp of thirty-two candle power placed on the desk opposite the paper, and one-tenth of a second if the exposure is by daylight. The plate holder is then put away until a convenient opportunity occurs for developing.

From the instant it is decided to copy an article until the time the operation is finished need not be more than twenty seconds. When twenty-five or thirty plates are exposed, which may be

within a week or so, they are all put in one tray and developed together.

As all have made the same exposure it is not necessary to watch them carefully, and in practice they may all be developed, fixed and rinsed (prior to leaving to wash) in ten minutes. The average time spent in copying each article or table, including preparations for photographing, exposing, development, fixing, washing, filing away and labelling is less than one minute according to the professor's experience. Surely this is quite a record. These negatives may be filed away in small envelopes stuck to the backs of paste-board cards. The plates used are only $1\frac{1}{4}$ -inch by $1\frac{1}{2}$ -inch, and can hold upon their surface two thousand words, so that each word can be easily read by means of an ordinary magnifying glass. This method has the advantage of preserving drawings which show with equal distinctness, and also of preventing errors in copying. In case one does not wish to copy more than four hundred or five hundred words, this number can be read with ease by any person of average eyesight without the use of a glass. So convenient is this method that Professor Fessenden declares that he uses it for copying all his correspondence. So entirely doing away with the ordinary office press.

THE CARBON PRINTING PROCESS.

(Continued.)

Having selected the negative that it is desired to print from, take black varnish on a brush, and place a border one-eighth to one-quarter inch wide all around negative on the film side or use a cut-out; this is called a safe-edge, the object of which will be explained later on. When the varnish is dry, place the negative in printing-frame in the same way as for ordinary silver printing; then, in very subdued daylight, or by gas or lamplight (which will not fog it), place a piece of tissue pigmented side in contact with the negative, replace back of printing-frame, and, having previously selected a negative of similar density, place a strip of ordinary silver paper in contact with the most dense parts, and place the two negatives out into diffused light to print. When, on examination, the silver paper shows some detail in the dense parts, the carbon print may be considered sufficiently printed. The printing-frame having been taken into a diffused light, remove the carbon tissue and place it face upwards in one of the dishes containing cold water, taking care to ensure its being equally wetted, removing air cells by passing the fingers lightly over the back and front. If, when the tissue left the frame, it felt stiff,

and when placed into the cold water curled inwards, then it should be allowed to remain in the water until it gives signs of flattening out (care must be taken to keep the tissue under water all the time); but if the tissue was limp, only a very slight soaking would be sufficient. The piece of opal on which it is intended to fix the print being handy, the tissue must be quickly placed in contact with it and squeegeed to insure intimate contact and the removal of any air or superfluous water. When this is done, the opal, with the print attached, should be placed between blotting-boards or paper for about five minutes, and is then ready to be developed. This is done by placing it in a vessel containing warm water, the temperature of which should be about 100 to 110 degrees Fahrenheit. When it has been in the warm water for a few seconds, the pigmented gelatine will commence to ooze out between the opal and the piece of tissue. The paper must now be removed by taking hold of one corner and gently pulling it backwards. If there is any resistance, allow the print to remain a little longer in the hot water and try starting to remove the paper by taking hold of another corner. Care must be taken to keep the opal under water during the operation. When the paper has been removed, gently lave the print with the warm water, when the pigment not acted upon by light will be dissolved away and the image begin to appear. If the printing has been correctly timed, no modification of temperature of water will be necessary; but should the print be rather overdone, somewhat hotter water may be used; if the print is undertimed—that is, too much detail is dissolving away—then it may be immediately plunged in cold water to arrest solution, and development continued with cooler solutions. In this way a very great latitude in exposure and development is permissible with Elliot's tissues. When development is complete, the print should be rinsed in cold water until the drippings from it are quite clear. It should then be placed in the alum bath for a few minutes, then rinsed again in cold water and placed in a rack to dry. The alum bath may be a saturated solution.

Instructions for the Use of Elliot & Son's Perfected Carbon Papers by the Double-Transfer Process.

For this process either a rigid or flexible temporary support must be used. Prepare negative and print as for single transfer. We find in practice that ground opal forms the best rigid temporary support, as it gives to the finished print a beautiful matt surface. Proceed as follows: Take a piece of clean and dry opal, thoroughly rub the surface with French chalk, remove loose particles by gently brushing and coat with plain collodion diluted to one-third strength by mixing in equal proportions collodion, alcohol and ether. When

the collodion is set, plunge into cold water and allow to remain until the solvents are removed by washing, then soak the printed tissue as for single transfer, place it in contact with the collodionized surface of opal, remove from the water and squeegee into contact. Development same as in single transfer. Special care must be taken not to disturb the collodion on edge of opal, otherwise the print may peel off during development. After the print has been allowed to dry it is transferred to paper. Cut a piece of double transfer final support a trifle less than size of opal. After soaking it in warm water until the surface feels slimy, remove to cold water, plunge the opal plate into same water, dash some of the water over its surface to remove air bubbles, bring into contact with the transfer paper and squeegee; when thoroughly dry remove print from opal by inserting a knife at the edges. Flexible temporary support is used for transferring the carbon image to rigid and other final supports, such as opal, ivory, panel, canvas, etc.

The temporary support must be thoroughly waxed before the print is transferred to it, otherwise it would adhere and could not be retransferred.

Elliot & Son's waxing solution ;

No. 1.

Benzol.....	1 ounce
Brown wax.....	3 grains.

No. 2.

Spirits of turpentine.....	1 ounce.
Resin.....	12 grains.

Dissolve separately and mix. Pour a little of the mixture on a piece of flannel, rub evenly over the surface of support and polish by rubbing lightly and quickly with a second flannel. Allow the solvents to evaporate and proceed as above, of course omitting chalk and collodion.

Final Support.

This may be of almost any material; there is hardly any limit to the applications of this process; the print may be transferred to paper, canvas, glass, opal, wood, stone, terra cotta, etc.; it is absolutely necessary to first prepare the surface with a thin coating of insoluble gelatine. This may be accomplished with gelatine and chrome alum as follows:

A.

Gelatine (Nelson's hard).....	1 ounce.
Water.....	8 ounces.

B.

Chrome alum.....	30 grains.
Water.....	1 ounce.

Soak the gelatine in water and then dissolve by the application of heat ; when dissolved, add three drachms of B chrome alum solution in two ounces of warm water.

After the final support has been coated with the warm solution set it up to dry so as to thoroughly harden the film.

In preparing papers for final support, float them on the chrome alum gelatine solution previously mentioned and allow to dry, and use some of the same solution, which may be somewhat diluted with water, for the purpose of transfer, i.e., again float the paper on the solution and whilst still wet bring the print on its temporary support into contact with it and squeegee. If Elliot's Double Transfer Paper is used it should be soaked in water until the prepared surface feels slimy, and the print then transferred. For transferring to uneven surfaces, such as very rough drawing-paper, etc., the single transfer process must be used.

The operation of mounting the tissue on the opal or other temporary support for development and the developing are exactly the same as described for single transfer. In mounting the print it is a good plan to plunge the temporary support into the water with the printed tissue, and under it ; then adjust them in position as they are being removed from the water.

Second Transfer.

When the print is developed and fixed in the alum solution and again rinsed in clear cold water, it should be put in a rack to dry, and as soon as dry it should be at once transferred. This is done by placing a piece of final support, cut a little larger than the print, in warm water until surface becomes slimy, then attaching it to the print, being careful to remove all superfluous moisture and air cells by squeegeeing. When this has been accomplished, place in a rack to dry—if possible, in a warm, dry current of air—and when thoroughly dry, the final support, with the picture firmly adhering to it, can be easily removed from the temporary support. A knife may be inserted at the edges to assist the removal. If ground opal has been used, the print will now appear with a charming matt surface.

Spotting Out Defects.

This may be done either with water or oil color, mixing the color to agree with the tint of the tissue.

The opal temporary support may be used repeatedly, but must not be washed after being once waxed.

Failures.

One of the first difficulties that may present itself in attempting to develop a carbon print is the failure of the printed tissue to adhere to its support. This failure to adhere will most probably be

due to the tissue having been allowed to remain too long in water before being squeegeed to support. If the tissue is horny it will curl inwards as soon as it is placed in the water, and must therefore be soaked until it shows a slight tendency to flatten out; immediately this tendency to flatten is noticed, the print should be brought into contact with its support and squeegeed into intimate contact. If the print is allowed to remain in the water until it shows signs of curling outwards, the chances are very much against its adhering.

Failures in Transferring.—If the print refuses to leave the temporary support, the cause will probably be through the waxing solution not having been properly applied, or it may be caused through the final support not having been sufficiently soaked.

The Safe Edge.—The object of this is to prevent the light acting right up to the edge of the tissue, as if this were the case it would be difficult to remove the paper without disturbing the printed part adhering to the support; but if there is a margin all around the tissue that has not been acted upon by light at all, there is no such difficulty.

Insolubility.—Another possible source of failure is the risk of the tissue becoming insoluble, thus preventing the development of the image; this may be caused by keeping the sensitive tissue too long, or keeping it in a damp place; the remedy is obvious.

Patchy Appearance of the Developed Print.—This may be caused in consequence of the surplus water not being blotted off tissue when it is squeegeed into contact with its support previously to commencing development; it is for this reason that it is recommended to place the prints between blotting-boards, so as to insure removal of surplus moisture.

Loss of Detail in High-Lights.—This may be caused either from insufficient printing, developing the prints in too hot water, or from using tissue that has only just been sensitized. Tissue that has been sensitized for two or three days is generally more satisfactory.

When printing from a very strong negative—i.e., a negative very opaque in the highest lights—and nearly clear glass in the shadows, it will often be found an advantage to expose the tissue to diffused daylight for a few seconds; this will cause a slight tinting over the high-lights, thus enabling the most delicate detail to be retained.

Insoluble Tissue.—In addition to the causes before enumerated, insolubility may be brought about through using impure bichromate of potash for sensitizing, or through not drying the sensitized tissue rapidly. By the use of Walpole bichromate this will be obviated.

Enlargements—The Transparency.

Having sketched out the various manipulations necessary for printing carbon tissue, we now come to the somewhat more difficult operation of enlarging; but before proceeding we would point out

that, although it is more difficult to produce an enlargement in carbon than it is in bromide, yet the results are so immensely superior that very few who aim at the best results, regardless of a little extra trouble, would be satisfied with the latter process after seeing the beautiful results obtained with carbon.

An enlargement cannot be made direct by the carbon process, in consequence of the slowness of the tissue as compared with gelatino bromide; it therefore becomes necessary to make an enlarged negative of the size required, and to do this the first operation is to make a transparency, and here the carbon process asserts its superiority over all other processes for this purpose.

In making a transparency for the reproduction of a negative it should be thoroughly printed. A dry plate will not admit of this, but a carbon transparency of this character may be easily made; and another point is that, provided the carbon transparency is sufficiently printed, a little over-printing is not serious.

We would here point out the difference between a transparency suitable for making an enlarged negative, and a transparency for lantern work or window decoration. The latter should be made with vigorous contrasts, the highest lights being left quite clear glass; whilst for the purpose of reproduction it is necessary that the highest lights are printed through, thus causing it to look flat.

A special tissue is supplied for making transparencies and should be used. Proceed to print in exactly the same manner as for ordinary carbon printing, only taking care to print much deeper, as before explained. To prepare the glass so that it will allow the print to adhere thoroughly, wash so as to remove every trace of dirt or greasiness, and coat with a thin solution of gelatine and bichromate of potash.

Gelatine.....	¾ ounce.
Water.....	1 quart.
Bichromate of potash.....	1 drachm.

Soak the gelatine in the water, and dissolve by gentle heat; when dissolved, add the bichromate of potash. After the plate has been coated with the warm solution, set it up to dry in bright daylight to thoroughly harden the film. It is a good plan to prepare these plates beforehand, as they will keep indefinitely. Proceed in exactly the same manner as for a single-transfer process, using the prepared glass instead of the opal or paper as directed. To ascertain whether the transparency is properly printed, when dry, lay it film-side downwards on a piece of white paper, and if the high-lights are just covered, it may be considered correct. It is not absolutely necessary that the highest point of light should be quite veiled, although it is usually an advantage.

Enlarging.

Having secured a good transparency, make the enlarged negative; and, although the wet-plate process is par excellence for the purpose, and care and judgment good results may be obtained with dry plates.

If a proper enlarging apparatus is not at hand, one method of making an enlarged negative is to cover up the window of a room having a north aspect and placing the transparency in the camera in the position usually occupied by the ground glass, place the camera as near as possible to the window, keep it steady by any convenient plan, and fix it so that the light reaches the transparency, without obstruction, but without allowing the light to enter the room, except that coming through the lens, then adjust an easel so as to hold a sheet of ground glass the size of the intended enlargement, focus the image of the transparency on this ground glass as required, and, adjusting the easel to the proper size of the enlargement, bearing in mind that in order to project an image the same size as the transparency, the camera must be racked out to just double the focus of the lens, and the ground glass to receive the image placed at exactly the same distance from the centre of the lens as the centre of the lens is distant from the transparency. Thus, supposing it is required to project an image of exactly the same size as the transparency, if an eight-inch lens were employed, the camera would have to be racked out to sixteen inches from the centre of the lens and the ground glass to receive the image placed at a similar distance from the lens on the other side. Thus, if it is required to make an enlargement twice the size of original with the same lens, the camera should be racked in to twelve inches and the easel removed to twenty-four inches; and to make the enlargement four times as large as original, the lens must be brought within ten inches of the transparency and the easel removed to forty inches from the lens. To make a reduction, exactly the opposite means must be used; the lens must be removed farther from the transparency, and the ground glass brought proportionately nearer. When the image has been focussed on the ground glass on the easel in the dark room, as before described, all that is necessary is to remove the ground glass and place the sensitive plate in its place, capping or covering the lens whilst adjusting the plate, then making the exposure and developing and fixing, etc., in the ordinary way.

Approximate Exposure for Making Enlarged Negatives.

With the aid of our exposure-tables it is a very simple matter to calculate what would be the exposure required for any conditions of time of day, month, times of enlargement, etc. But it must be borne in mind that the ratio of aperture to focus marked

on lenses lose their value when a lens issued for enlarging or reducing purposes; thus, if the lens is eight-inch focus, to enlarge three diameters the lens would be, instead of eight inches from the plate, thirty-two inches, therefore F-32 would only have the value of F-128.

Lantern-Slide Making.

This process lends itself particularly well for making lantern slides as almost any desired result can be obtained, from the most delicate effects to the utmost opacity in the shadows, combined with absolute bare glass in the high lights. For general purposes the special transparency tissue will usually be found the best, but the blue, green and black tissues lend themselves equally well for many subjects. The special transparency tissue gives the softest results, whilst the blue and green tissues tend to rather more vigorous images.

The process of making lantern slides is exactly similar to that of making transparencies of enlarged negatives, with the exception that a transparency for the latter purposes should be printed right ought, detail being observable in the highest lights, whereas for the purpose of making lantern slides the highest lights should be left bare; roughly, it may be estimated that a lantern slide requires a little more—say one-half more—printing than for prints on paper; whilst for transparencies for enlarging, two or three times as much printing is required. As a lantern-slide may be placed in the optical lantern, either film to or away from the condenser, it follows that it is never necessary to resort to do double transfer for this process, all that is necessary is to place the usual spots or other indication such as name, etc., on the glass side of the transparency itself instead of on the cover glass, as is usual with slides made with dry plates.

Terms Used in Carbon Printing.

Development.—The washing away in warm water of the soluble parts of the tissue not acted upon by light.

Actinometer (Johnson's).—An apparatus for registering the action of the light, consisting of a box containing a strip of sensitized silver paper, a small piece of which is drawn out at a time and exposed to light.

Tints.—One tint means when the last-named strip of paper has been slightly drawn forward and become darkened to same color as on box. Two or more tints mean repetitions of the foregoing.

Safe Edge.—An opaque mask on back of negative round edge of about $\frac{1}{8}$ to $\frac{1}{4}$ -inch wide.

Tissue.—Paper coated with pigmented gelatine.

Single-Transfer Process.—The development of the picture direct on its final support.

Double-Transfer Process.—The development of the picture on a temporary support, to be again transferred to a final support.

Temporary Support.—The material on which the picture is developed previous to transferring.

Final Support.—The material on which the picture is to finally remain, whether paper, opal, wood, etc.

Fixing.—Placing the print in a saturated solution of alum to remove last trace of bichromate and to harden the film.

Waxing Solution.—Pure wax and resin dissolved in turpentine, etc.

Reversed Negative.—A negative which, when printed in silver, would show objects transposed from left to right, but when used for the single-transfer process shows object in correct position. A reversed negative can be produced by placing a dry plate in the slide so that the glass side faces the lens; but care must be taken to see that the glass is quite clean and that the spring in dark slide does not injure film.

Continuing Action of Light.—The peculiar property of sensitive carbon tissue to go on gaining in detail if not developed immediately after printing.

TO COLOR PHOTOGRAPHS.

Prints may be considerably improved, especially portraits, by a judicious application of color; even in the case of prints from flat and under-exposed negatives a little color will, like charity, "hide a multitude of sins." No knowledge of printing or drawing is requisite, only a steady hand; and although it is really a process of smudging, the effect, when viewed in the natural way as a finished print, leaves no trace of the "prentice hand."

The materials required are—two brushes, one fine and one coarser, for using the color as a wash; a few penny packets of aniline dyes—water-colors will not do in this process, as they will not stain the film as the aniline series do. The range of colors is rather limited, but, as the object is rather to tint than to color, a smaller range will do. Magenta, pinks, and similar shades are but a question of dilution. Violet, blue, are the principal, then green, brown; the last two are not good colors, and require mixing with other colors, or the result will be unnatural. For medium you will require acetic acid and methylated spirit. Mix a small quantity of each with a crystal or two of the desired color. An inverted

plate makes a good palette. Let it be one shade deeper than you wish the finished tone to be when dry. Take a portrait for instance. First, alum all prints, not only to harden film, but it will tend to eliminate the hypo. Squeegee the print on to glass in the usual manner, on to a negative glass, and while only partially dry give the face a wash of color. Do not attempt to pick out the high lights, but give the face a bold stroke with a comparatively moist brush. To avoid patchiness, preserve the outline as far as possible, then do the hands. The cuffs, collar, and frilling may be put in a harmonious color, or left alone; if a light dress or blouse, say mauve (violet and magenta), or pale blue, and pick out the decorations (if pronounced) with another soft color. When you have made your brown to taste, touch up the hair; leave the furniture alone. Flowers may have the slightest possible tints. The idea is to brighten up only those parts that strike the eye. When dry, if too faint repeat process; this generally applies only to the face and hands. If too deep, sunning will take it down, or moisten with methylated spirit, and soak up on blotting paper. Practise on a few old prints first. When stripped off the glass the color will be very soft. Mount in the usual manner for glazed prints. These crude remarks are intended only to give a general idea. With a landscape a few judicious touches of color will enhance the effect even in a spoiled print from bad manipulation.

A GOOD DEVELOPER.

After much experiment, says a writer in *Mosaics*, I have formulated the following, which I have used the past year with increasing satisfaction, and as an all-round developer there is none better in my judgment. Formula for metol-hydroquinone developer:

No. 1.		
Water.....	24	ounces.
Metol.....	60	grains.
Hydroquinone.....	60	"
Sulphite of soda.....	1	ounce.
No. 2.		
Water.....	10	ounces.
Carbonate of soda.....	1 ½	"
Bicarbonate of soda.....	½	"

To use take six ounces of No. 1, half to one ounce of No. 2, and a few drops of a ten grain solution of bromide of potash. The preparation of Nos. 1 and 2 may be varied to suit plate, light, etc. To soften the effect more water may be added. It is excellent for snap shots, materially shortening exposures under the skylight, never stains the negative or fingers, and is used over and over.

CLIPPINGS.

Clearing Bath for Lantern Slides.

If brilliant and sparkling slides are wanted they should be immersed in a clearing bath directly after removal from the fixing bath, only giving a momentary rinse in clean water between the two solutions. The following will be found to give very brilliant slides :

Iron protosulphate.....	3 ozs.
Citric acid	1 "
Alum.....	1 "
Water	20 "

This bath exerts considerable influence on the color of the silver deposit, tending towards blue-black. The action of the bath should, therefore, be noticed, and the plate removed directly it is cleared enough, otherwise you may be surprised to find an admirable moonlight effect in place of a sober, every-day landscape.

**Pyro-metol Developer.—**

A.

Pyro.....	60 grs.
Metol	40 "
Potassium metabisulphite	100 "
Potassium bromide	10 "
Water to	20 ozs.

Dissolve the metol first, using heat if necessary, but if heat be used, allow the solution to cool before adding the metabisulphite. Next dissolve the metabisulphite and bromide and pour the solution over the pyro. Make up the bulk to 20 ozs.

B.

Sodium tribasic phosphate	2 ozs.
Water to	20 "

The above formula may be altered by substituting 60 grs. of quinol for the pyro, but it should be dissolved in an ounce of alcohol and added to the balance of the solution, a little at a time, with energetic shaking.

**Pyrocatechin Developer.—**

The pyrocatechin without sulphide does not produce pure silver pictures, but brown ones colored by the oxidation product of the pyrocatechin. Therefore Dr. Eder recommends this developer

for the preparation of diapositives on silver bromide gelatine ; it produces delicate tones of a pleasant brownish-gray color. Dr. Eder and Prof. Valenta give the following formula :

Water	100 cm. ³
10% solution of potash.....	33 "
2% solution of pyrocatechin	3 "

R. E. Liesegang composes the developer as follows :

Water	100 cm. ³
Carbonate of soda	10 grammes.
Pyrocatechin	$\frac{1}{4}$ gramme.

The pyrocatechin developer is suitable not only for diapositives, but also for prints on silver bromide paper ; it produces pictures of a brownish-black tone, much more agreeable than that obtained with pyrogallol. As a negative developer pyrocatechin is inferior to pyrogallol.—Archiv.



Paper for Printing Plans.—

An excellent paper which gives black lines on a white ground can be prepared as follows :

A.

A 10 per cent. solution of gelatine.

B.

Ferrous sulphate.....	10 grains.
Tartaric acid	19 "
Ferric chloride	29 "
Distilled water.....	$\frac{1}{2}$ ounce.

Mix the two solutions, and whilst warm distribute over the paper and dry. After printing, develop with

Oxalic acid.....	1 grain.
Gallic acid.....	7 grains.
Water	$2\frac{1}{4}$ ounces.

till the lines become black and then wash well with water.



Stripping Negatives.—

Two methods for stripping negatives from glass are given in a recent issue of the Photographisches Archiv. The first, by Mussat, is on the following lines: The plate is first placed in a bath consisting of one part of commercial formalin and ten parts of water. After soaking for five minutes it is rinsed with water,

and the film is cut through with a knife at about one-tenth of an inch from the edge. The plate is then placed in a water bath and the temperature raised to about 120° Fahr. The film separates from the glass and is transferred to a collodionized plate. It may then receive another coating of collodion, and can easily be separated from the temporary support. The second method, by Roy, recommends the use of a bath consisting of 100 parts water, 50 parts formalin and 5 parts glycerine. The film is cut through at the edges and allowed to dry. To strip the film from the plate, place the negative for three minutes in a bath of 100 c.c. water and 20 grammes carbonate of soda. Without washing, immerse it in a 5 per cent. solution of hydrochloric acid. The carbonic acid generated between the film and the glass will effect the separation. The film is then transferred to collodionized glass, re-collodionized and stripped. In either case the film does not expand.



Blue Prints.

Some photographs look exceedingly well when printed in blue. The following may help some to make a trial of the process:—Select a smooth paper with hard surface; heavy, unruled writing paper may be used. Make up the following solutions:

A.	
Red prussiate of potash	240 grs.
Water	4 ozs.
B.	
Citrate of iron and ammonia	360 grs.
Water	4 ozs.

In practice use equal parts. Before coating the paper it should be carefully damped and placed between blotters until limp. Print till shadows are bronzed. After printing place in a tray of water for a few seconds—for just sufficient time to wet the surface and make the paper limp—then transfer to a solution of water and ammonia, one drop of ammonia to the ounce of water. In this bath the print will bleach and turn purplish. It is preferable to rather over-print. When the print is sufficiently reduced by the action of the ammonia bath place it in the following solution:

Water	8 ozs.
Sulphate of iron	½ oz.

The color will at once change from purple to blue. The prints should be kept in this bath about two minutes. To clear the whites immerse in a dilute ammonia bath, and then wash in clean water. Seascapes and river scenes look remarkably well when printed by this process.—Photo News.

Beach's Metol Developer.

The following modification of the metol developer is said to result in a solution that keeps clear almost indefinitely, by no means an unimportant matter to small users :

A.	
Water.....	16 ozs.
Metol	48 grs.
When dissolved add	
Sodium sulphite.....	192 grs.

and shake until dissolved. Finally add half an ounce of fresh sulphurous acid.

B.	
Carbonate of potash.....	1 oz.
Water	3 ozs.

For use with lantern slides or bromide paper take one ounce of A, thirty drops of B, and half an ounce of water. This will develop a dozen lantern plates in succession. For use with negatives, the proportions of A and B may be increased without increasing the amount of water. It produces remarkably clear slides, perfectly free from fog.

**Ink for Marking Lantern Slides.**

The following formulæ are suitable for making white ink for marking lantern slides with an ordinary pen.

If oxide of zinc is ground in gum water until quite smooth, it will form a fine rich white ; the proportions are :

Picked gum arabic.....	1 part.
Water.....	30 parts

Grind enough zinc oxide with the above to give the depth required.

Another useful formula is the following :

Chinese white	1 oz.
Gum arabic	2 drs.
Alcohol.....	1 "

Water, enough to bring the consistency to cream. Dissolve the gum in a couple of ounces of water and then stir it with the Chinese white until a smooth paste results. When well mixed, add water gradually with frequent stirring, until sufficiently thin to flow freely from the pen. Occasional trials will determine when this point is reached. Finally add the alcohol.—Photo News.

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“CONVENTION 1897.”

We are in receipt of a communication from Mr. Westlake, Secretary of the Canadian Photographers' Association, and there is no doubt that the enterprising Secretary is getting a big hustle on for the meeting this year at London. He states that he has been in communication with a large number of manufacturers, that valuable and important prizes of apparatus, just such as photographers require, are already promised. We have so often urged in these columns that photographers should take a more active part in the Association, that it seems almost superfluous to again hammer at this old subject. There is one feature about the Secretary which we admire, and that is, the early date at which he has got to work. Last year we received no information regarding the meeting of the convention until after the journal for that month had gone to press. We can assure Secretary Westlake that we shall do everything in our power to assist the convention management to make this one of the greatest conventions that has ever been held in Canada. Those who have attended the conventions do not need to be told the advantage it is to the working photographer. They have seen members of the profession, who did not stand anywhere in the prize list, by careful comparison of their work with the prize winners, by attentive and continued effort reach the first prize. The first prize at the convention means

money in the photographer's pocket every time. For the care and attention he gives his patrons during the year and his endeavors to have a selection worthy of the chief prize will produce some better work and better results. Those who patronize them are always satisfied, and his fame soon spreads abroad throughout the land. All success to the convention of 1897.

CLUB NOTES.

The Valley Camera Club, of Phenix, Rhode Island, was organized November 4th, 1896, with the following officers: President, W. E. Smith; Secretary, J. B. Lawton; Treasurer, F. J. Hoxie; Executive Committee, W. E. Smith, F. J. Hoxie, C. T. Howard. The club starts with sixteen members and several applications pending.

Respectfully,

W. E. SMITH.

PHENIX, R.I., December 10th, 1896.



At San Jose, California, a meeting of amateurs was called for the 17th of last November, to meet in the law offices of C. E. Goodsell, for the purpose of organizing a club. The attendance was much larger than was expected, and constitution and by-laws similar to those of the California Camera Club were adopted. A committee was appointed to secure club rooms, and the meeting adjourned for one week, at which time officers were elected for 1897 as follows: Geo. C. Meeker, President; M. R. Gibson, First Vice-President; A. Schoenheit, Second Vice-President; James Gally, Secretary; C. E. Goodsell, Corresponding Secretary—address, Bank of San Jose Building; R. E. Collins, jun., Treasurer; C. E. Bried, Librarian.

The membership of the club is now about seventy-five and is still increasing. Monthly meetings are to be held on the first Tuesday of each month, and at each meeting there will be arranged lectures or exhibitions of some kind.

A fine suite of rooms have been fitted up in the Safe Deposit Block, in which the light is unusually good. The dark-rooms and printing rooms are superior to any in San Jose, and the reading room will be provided with all the leading photographic periodicals.

Last Tuesday evening, January 5th, the first meeting was held in the new club rooms, and brought out about fifty members who made the opening meeting an enthusiastic one. After the routine of business was transacted, the Lantern and Slide Committee took

charge and conducted a highly entertaining exhibition. About seventy-five views were thrown upon the screen. The slides embraced scenes in and about San Jose and throughout the State generally that had been made by various members of the club. Questions and friendly criticisms brought out much valuable information and made the affair a source of profit as well as a delightful entertainment.

Preparations are being made for a public Print Exhibit on April 6th, the advertising poster for which will be selected by competitive exhibits in the club rooms. Interior work in competition was also planned, for the purpose of showing the quality of pictures that could be taken in the club rooms.

Yours truly,

C. E. GOODSSELL,

Corresponding Secretary.

Bank of San Jose Building.

A LETTER FROM SECRETARY WESTLAKE.

TO THE EDITOR:

SIR,—Since the election of the new officers of the Canadian Photographic Association, we have been hard at work; have corresponded with manufacturers and dealers both in the United States and the Old Countries, and their replies have placed the success of the 1897 Convention beyond question. Our arrangements for the entertainment of the members will be most complete and will afford them a splendid outing. They will include a trip to Springbank Park (London's pleasure resort), a baseball match and games while there and a banquet, with songs and mirth interspersed, in the evening. We will also have a splendid programme for the sessions. A number of new (coming to the front) men have promised to come and will contribute valuable papers. An army of demonstrators will be present with valuable information. Valuable prizes are to be given and the list already includes lenses from Ross and other makers. We are endeavoring to get exhibits of French, German and English work. Altogether it will not pay the Canadian photographer to stay away from the London Convention, which will probably be held in August.

Sincerely yours,

London, Ont.

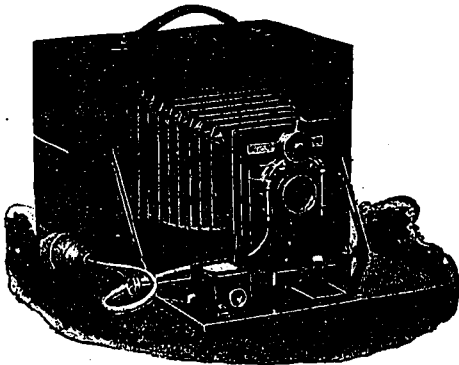
FRANK G. WESTLAKE,

Secretary P. A. C.

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