

them, says: "Anthony's pictures are much quicker taken than mine, and I must get some sort of shutters to open and shut quickly." He should add: "I will positively never take another picture which is not as entirely free from distortion as Messrs. Anthony's pictures are." Anyone who has thoroughly mastered the details of photography should next turn his attention to lenses and the optical resources at his command, and not go on for ever coating plates and developing wretched distorted images. The time has now come when any man who works with a distorting lens, when a perfect one is to be had, deserves to be considered a Pariah of Photography,—a man who will not take the trouble to think,—or who prefers being laughed at to spending a few pounds in a good instrument. English photographers seem to be half asleep. Why are better instantaneous pictures taken in America than in England? Why was an instrument like the Solar Camera in extensive operation in America for more than two years before a single really good life-size portrait was taken in Europe? How is it that we have received the first order for a Panoramic Lens and Camera from an American Firm, and that the first large instrument will be exhibited in *New York*, and probably the second in *Paris*? And who will English photographers have to thank if the first grand panoramic views which are exhibited come from America, and represent the magnificent scenery of the New World;—or if groups of portraits, arranged in one picture in a manner hitherto thought impossible, should be first exhibited in the Broadway of New York?

France, as well as England, has just lost one of her most distinguished practical opticians. The death of Mr. Andrew Ross has been quickly followed by that of M. Charles Chevallier. We also learn that M. Poinso, a distinguished French mathematician, is lately dead. Some years ago we published at Cambridge an English translation of M. Poinso's "*Elements of Statics*," a work remarkable for the ingenuity and elegance of its demonstrations; and we feel more than ordinary regret in recording his death.

#### ARTISTIC POSITIVE PRINTING.

In No. 82, I described, in an article bearing the above title, a method of printing upon albumenized paper, and toning the prints with a solution of auro-chloride of sodium. That process is suitable for small stereoscopic pictures, architectural subjects, copies of sculpture,—and reproductions of all kinds in which the object is to exhibit as clearly as possible the details, particularly in the shadows. But valuable as the process is for such subjects as the above it is particularly unsuitable for those in which the object is not so much to render visible and intelligible every minute detail as to present a general resemblance to

nature, pleasing to the man of taste and instructive to the artist. Photographic studies of bold natural scenery,—majestic ruins,—skies, &c., should not be printed upon a varnished surface, but upon plain paper, because varnish destroys the general truthfulness of effect, and consequently the sentiment of the picture. There is nothing in a natural scene which suggests to the mind the idea of varnished shadows, but on the contrary the real charm of a fine subject consists in a sort of mysterious impression of depth and space; and a varnished surface injures this effect by rendering the subject represented more intelligible in its details, flat, little, and vulgar. In illustration of this I have before me two good photographic prints of a fine subject, viz., the iron bridge at Coalbrook dale,—one upon plain the other upon albumenized paper. In the former, which is a perfect gem of artistic effect, there is atmosphere, space, and mysterious depth of shadow. It is true that you can neither count the individual rails of the bridge,—nor tell exactly how many windows there are in a distant cottage,—nor how many separate barges and masts there are in a distant group; but neither do you care to go into these details. The general effect of the print is true to nature, and you can perceive that the bridge has rails, the cottage windows, the barges masts, and that the river stretches miles away. That is all you care to know. You have not agreed to pay for those rails at so much a-piece,—your old nurse does not live in that cottage,—your father-in-law does not own one of those barges,—and in a word you not only do not care two-pence about those particulars, but you are positively glad that they are left undefined. But in the albumenized print from the same negative, the details which you don't care about are *more* clearly, but not *quite* clearly, indicated, while the general truthfulness of effect and resemblance to nature—the atmosphere, space and mystery are destroyed; so that you gain a loss—and the result is that you mount the artistic picture in your portfolio,—while, *unless you have a particular interest in the portrait of the bridge*, you consign the albumenized print to the waste basket as so much uninteresting lumber, which you do not allow to accumulate. It is extremely difficult, however, to put the idea which I wish to convey into words, and philosophize correctly respecting it. Those who have *felt* the peculiar charm there is in a good print of a fine subject upon *plain* paper,—and the total want of interest there may be in the same subject—printed upon *albumenized* paper, will understand my attempt to explain, however imperfectly, the reason of this; but those who have

not felt what I describe—will certainly never be reasoned into a belief of it.

In the present article I will endeavour to describe minutely a method of printing upon plain paper, which yields, when successfully conducted, proofs possessing in the highest degree the claim to be considered artistic according to the meaning of the term which will be gathered from my remarks in the preceding paragraph. That is to say, the prints are as vigorous as engravings or lithographs,—the tint of the paper is a beautiful grey (not yellow), but nearly white, and the color of the shadows ranges from a purple brown to a rich black. As for the definition, it is evident that plain paper has a rougher surface than albumenized paper, and therefore the definition and continuity of shade cannot be quite so good upon plain paper. In this respect there is a small sacrifice made to general truthfulness of effect.

No process of sun-printing that I have tried gives vigorous prints upon plain paper. They are always mealy compared with developed prints,—and when toned with gold have an inky look which is disagreeable. Time was, when in the palmy days of old hypo and yellow prints, I endeavoured to persuade myself and others that sun-prints, upon plain paper, toned with sel-d'or, are beautiful in color;—but I have now changed my opinion; partly, no doubt, because I have discovered that developed prints not toned at all are more vigorous and far more beautiful in color; and partly because as one gains more experience one's opinions become modified.

The process now to be described is the simplest and best development-printing process that I know of,—and I have made this subject a particular study and hobby for some years, because I have always felt that without a good and certain printing process photography is not worth much to any man who likes natural scenery and wishes to copy it faithfully and artistically.

Are there any among my readers who are thoroughly dissatisfied with albumen prints, and who understand my attempts to explain my own failings with respect to plain-paper printing, but who have not yet succeeded in printing as they like? Then I advise such to pay particular attention to this paper, because I can put them in the way of obtaining with tolerable certainty the kind of prints that we both like; and I speak not from the knowledge gained by reading but from an immense deal of practical experience in this particular mode of printing, which, as I said before has been my hobby for years.

The process then depends in the first place upon the kind of paper you use—Hollingworth's thin paper gives vigorous black prints and clean whites, but the surface is rougher than that of French paper. Canson's thick positive paper gives vigorous prints having much beautiful variety of color, both in the shadows and in the tint of the lights,—and the surface is finer than that of English paper; but it is not easy to manage, and requires different treatment *on account of the free alkali which it contains*. Canson paper is sized with starch, and resin dissolved in caustic potass. Hollingworth's paper is sized with gelatine and alum. So that Canson paper is alkaline and Hollingworth's acid,—hence the difference required in the treatment.

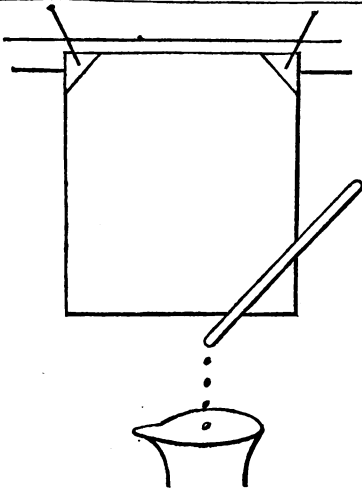
Suppose we agree to use Canson paper.

First, immerse a number of sheets for some hours in a salting bath composed of 8 grains of salt and  $\frac{1}{2}$  minim of hydrochloric acid to the ounce of water;—the object of the acid being to destroy the alkalinity of the paper, which it does by producing chloride of potassium. Hang the sheets up to dry. If you find them somewhat tender reduce the quantity of the acid in the next experiment. If any one should suggest to you that the acid renders the paper absorbent, and rough, and causes it to give a sunk and mealy print, do not believe this, for my results decidedly prove the contrary. Besides, a good effect of the acid is that it decomposes the villainous ultramarine in the paper, producing by the decomposition of that delightful photographic ingredient (sulphide of sodium) chloride of sodium, and sulphuretted hydrogen, which escapes. The paper, which is *blue* before its immersion in the salting bath, comes out *white*.

Excite the paper by floating it for three minutes upon a nitrate bath made thus:—

Nitrate of silver.....	60 grains.
Distilled water .....	1 oz.
Lemon juice .....	8 minims.

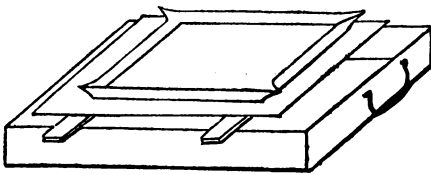
In the summer time a much weaker bath will do,—but in cold weather it must be as strong as I say. You must not use citric acid, or any other acid, instead of lemon juice. The lemon juice is the most important point in the process. It all turns upon that. Vigor is got by some peculiar combination of silver with the mucilage in the lemon juice, and nothing that I know can be used as a good substitute for it. Hang the papers up to dry in the manner shewn in the following figure, and run a glass rod along the bottom edge, and collect the drippings in a measure:—



Excite the prints over night and use them the next morning. They won't keep longer than a few hours.

It doesn't matter what the weather is for exposing. If it rains cats dogs and pitchforks, expose at the window;—and if it is as black as thunder, or a thick fog, put minutes for seconds and all will come right. Vigorous prints can be obtained in a feeble light with a long exposure just as well as in a strong light with a short exposure. A great deal of fudge has been written about the light. Don't believe it. You can get vigorous prints in *any* light. Expose until you see a faint trace of the shadows of the picture. The outside margin of the print will be your guide.

To develop the picture turn up the edges so as to make it into a tray; and put it upon a sheet of glass,—as shewn in the following figure:—



If you like to put a zinc tray filled with hot water under the glass that will hasten the development, and please impatient people,—but I never do it myself.

Develop with a saturated solution of gallic acid, and spread it about with a glass rod shaped like this:



The gallic acid should be dissolved in *cold* distilled water—*just before you want it*—don't use a stale solution; and don't on any account put the bottle of solution into hot water,—if you do there will be formed a muddy deposit upon your picture, and it is very likely to be covered with stains. Filter the solution before using it. Don't use the sediment of an old solution for a fresh lot, but throw it away.

It is better to develop the picture in a warm room if possible. Things don't go on well at a temperature much below 45°. Push the development rather beyond the point at which the picture looks pretty; because the yellow light is deceiving, and the print loses a little in the hypo. I know of no operation in photography so interesting as that of watching the development of a fine positive print, and my private belief is that those who decry this process are muddling fellows who have never succeeded with it.

When the development of the print is finished hold the print up by one corner to drain thoroughly; then put it into the following fixing bath of hypo, firstly face downwards—and then turn it over and under several times:—

Hypo, 1 ounce by weight.

Water, 20 ounces by measure.

It must be a small quantity of a fresh solution that you use, and when done with you must throw it away. You can wash the print if you like before putting it into hypo; and that plan is the safest as regards fading. Leave the print 20 minutes or so in hypo, and then wash it in the usual thorough manner. When wet it is of a rich dark brown color,—but when dry, (particularly if dried before the fire), it assumes some wonderful shade of black which will probably delight you exceedingly, and the lights will have an indescribable tint of grey, which is exactly right.

The negatives most suitable for this process are a shade or two less dense than those which are usually preferred for sun-printing. The development process exaggerates the contrasts, and that is why it has got the credit of not rendering the half-tones; but with a suitable negative there is no deficiency in this respect.

The nitrate bath after it has been used a few times turns blue, but not muddy. Don't use kaolin, or animal charcoal, to decolorize it;—the blue color does no harm beyond that of imparting the faintest imaginable tinge of grey to the paper. Citric acid is a feeble developer, and this blue color is no doubt produced by its reducing action upon the silver salt. There is an unexplained connexion between the blue color of the bath and the blue color of collodion negatives which are developed with pyrogallic and citric acid. I

used to attribute the blue color of the bath to my having dipped a pin into it, but that was wrong I fancy.

I have given up adding gelatine or any other mess to the salting bath because I find it injures the purity of the lights, and does no good whatever as regards vigour and definition.

Hollingworth's paper is treated in the same way as Canson's, except that there is no hydrochloric acid added to the salt bath.

When iodide and bromide of potassium are added to the salt bath, the paper becomes much more sensitive, and a range of blue and violet tints are got which closely resemble those due to gold, and cannot be got with salt alone. I am not sure that I like those inky tints, except now and then for a particular subject.

I have never been quite happy in my attempts to substitute the brush for the bath in this process; although I believe it might answer in more skilful hands.

There is so much positive enjoyment in printing by this process from negatives that one likes, that I look upon a day's printing occasionally in this way as a sort of charming photographic dissipation; while printing upon albumenized paper by the direct process I consider as so much downright detestable fag.

THE EDITOR.

### THE POSITIVE COLLODION PROCESS, WITH SOME REMARKS ON THE ALABASTRINE PROCESS.

(Concluded from our last.)

I have tried some experiments in the addition of a chloride to collodion for positives, but without sufficiently satisfactory results. I have been inclined to think that the tone of the picture was improved by the addition, but have not repeated the trials sufficiently to speak with certainty.

Sometimes, with collodion quite new, I find the blacks improved by the addition of a few drops of tincture of iodine. Still better than this for the purpose, I have found the addition of about a drop to the ounce of hydrobromic acid, which rapidly produces the effect of maturity.

*The Nitrate Bath.* This, as I have already said, I prefer sufficiently rich in silver to give a creamy film. About 35 grains of pure re-crystallized nitrate of silver to the ounce of distilled water. A simple and efficient mode of charging it with the iodide of silver, is to coat a large plate with iodized collodion and leave it for a few hours in the bath. If on trial a clean bright picture, free from streaks or fog be produced, the bath does not require further preparation. This, however, rarely happens; the addition of from a quarter of a minim to one minim of nitric acid is generally required. I generally commence with the smaller quantity, and increase it until on trial a clean brilliant picture is the result. The bath once in condition I find generally continues so for a very long time, on

being filled up from time to time with a forty-eight grain solution. If from long use a large quantity of ether and alcohol have accumulated in the bath, I pour it into a wide-mouthed bottle or jar, and place that in another vessel of hot water, in order to evaporate the excess of spirit. This I have generally done in daylight, and have found a blackened precipitate. On filtration I have invariably found the bath work perfectly. Beyond this I rarely like to interfere with a bath once in good condition, and notwithstanding that I find some variation at different times in the condition of the bath, I do not remember in the course of a somewhat lengthy photographic experience, to have had spoiled a single ounce of bath by the ordinary process of working.

*Developing Solutions.* The preparation of these must depend on the class of picture to be produced, as much of the tone of the picture depends on the developer. The salts of iron are in all cases preferable to pyrogallic acid for positives, giving a better picture with less expense. Even when the latter is used with the addition of nitric acid the picture lacks brilliancy and the exposure is long. The class of picture produced by development with the protoxide of iron is materially affected by the nature and quantity of acid with which it is combined. I well remember the results given by two or three different formulæ. The first I shall name contains

Proto-sulphate of iron . . . . 15 gr.  
Glacial acetic acid . . . . . 20 min.

The amount of acetic acid may vary with the temperature from 15 minims in winter to half a drachm or upwards in summer. Very certain results may generally be obtained with this developer. The pictures are bold and vigorous, possessing at the same time sufficient half-tone to give roundness and perfect modelling. They are, however, especially if the collodion contains a bromide, generally low in tone, having creamy-looking lights, and an entire absence of metallic lustre. The addition of 10 grs. of nitrate of potash to an ounce of this developer, gives, from the formation of a small portion of proto-intrate, a slight accession of metallic brilliancy and whiteness to the picture.

Another developer, giving generally very fine results, contains

Proto-sulphate of iron . . . . 20 grs.  
Glacial acetic acid . . . . . 20 min.  
Nitric acid . . . . . 2 "

With a collodion iodized with iodide of potassium about three grains and a half to an ounce, and as much bromide of potassium as it will dissolve—which is a very small quantity—I have produced exceedingly fine results. Some of the best collodion pictures I have seen were produced by this combination.

Another developer contains

Proto-sulphate of iron . . . . 10 grs.  
Nitric acid . . . . . 2 min.

This gives an extremely metallic picture, with plenty of half-tone, but unlike the general effect of a Daguerreotype, but greyer in the whites. If the exposure be at all too short the picture is covered with metallic spangles; but if carefully timed the results are pleasing, but not so vigorous as either of the former developers.

The preparation of proto-sulphate of iron, or rather proto-nitrate and proto-sulphate combined, given by Mr. Sutton, is an exceedingly fine developer. The formula is as follows: dissolve 1-oz. of powdered nitrate of baryta in 16-ozs. of water, and when dis-