

the mixture. Nos. 4, 5, and 6 are done so, and are two years old.

On taking from the printing-frame, wash in chloride of sodium, as above, then in water, and tone in—

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| Chloride of gold | ... | ... | 8 grains |
| Distilled water | ... | ... | 16 ounces |

Shake well, and add—

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| Acetate of soda | ... | ... | 1 drachm. |
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This quantity will tone the proportion of thirty-two prints whole-size.

After washing thoroughly, fix in hypo bath, one ounce to five ounce of water. All my work is done in yellow light, and an abundance of it. In the toning bath the proof needs close watching for the first few proofs, afterwards it works slower.

I believe that the principal cause of fading (of course there are several others, such as bad paper, bad toning, and bad fixing, and want of proper care in handling the proofs), is our bad system of washing. The plan of hanging a print up to dry I have never approved of, because I do not believe that any amount of soaking or washing will remove all the effect of the toning and fixing ingredients from the paper; they must be forced out. In a number of your Journal of 1860 you allude to a good plan, that of passing the proofs through a patent clothes-wringer: I have tried it, but the pressure is not enough, as I understand it. I therefore set to work and got a machine that answers a double purpose, and I firmly believe will be found of great utility, not only in removing the water from the proofs, but afterwards in mounting them on pasteboard, and for which a lithographic press is recommended.

I enclose you a sketch (made for me by Mr. Thompson, an American chemist residing here, and who estimates the expense of getting them up, in New York, at from sixteen to twenty-five dollars) and description, to which I refer you; I have now a bungling wooden one, but wish for a proper one, if it can be made at about the price above stated. Please give me your opinion about its utility.

I have lately noticed that an effort is being made to introduce some new articles into collodion, with a view of obtaining sufficient intensity without resorting to redeveloping agents. With this object before me I now send you a sample of cotton known here as "Ixcaco," which, I think, would be worth the while of making gun-cotton of it, and testing it. The colour is very suitable, and I have an impression it may help. My own experience is, that any collodion of a deep yellowish colour will produce negative pictures of greater intensity than a clear one, provided the colour is caused by the liberation of iodine from the sensitizing agents used. The cotton in question will produce the effect. It will require picking out and cleaning, as I send it in its rough state. Try it, and if it suits let me know, and I will send you a quantity; I cannot get the right quality of acids here for a fair test, so that some trials I made were failures, the cotton not dissolving.

A root grows here, and is known as *camotillo*, that produces the effect of turmeric, described in the Xantho-Collodion; I have tried it with good success; but what I have found answer equally well is the following developer:—

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| Protosulphate of iron | ... | ... | 2 ounces |
| Distilled water | ... | ... | 20 " |
| Acetic acid | ... | ... | 2 " |
| Sulphuric acid | ... | ... | $\frac{1}{2}$ drachm |
| Refined loaf sugar | ... | ... | 10 grains |
| Alcohol | ... | ... | $1\frac{1}{2}$ ounces. |

I have obtained negatives with this developer as intense as needs be, though not at all times, for instance, when the exposure has not been right. For positives I use a modification of the developer: half the quantity of acetic acid, and substitute nitric for sulphuric; the result is a clear, bold white and black picture, with well-defined half-tones, and but very slightly metallic. My object in adding the sugar

to the developer is, that I find it has a tendency to rot the collodion when added to it; this effect is not observable when used in the developer, yet a like intensity is produced. These facts I learned as far back as 1854, when experimenting with different articles as developers.

You will probably recollect sending me, some time since, a few articles, among which was some iodide of cadmium: on its reaching me, one ounce of it, from some cause or other, was nearly black. I made no use of it, until a few days ago, on running short of the article, I opened the bottle, and found it in a black wet mass. I sensitized a few ounces of collodion with it, and unfortunately threw the balance away; I say unfortunately, because, on trying a picture, on the collodion, settling very bright purple and green colours appeared (and for which I am unable to account), which still retain all their original brightness; they are not well seen without slightly turning the picture on one side. The editor of one of our newspapers was with me at the time, and has since published a notice of it. I tried a second, and a third, in fact several, and in every instance obtained the same result: in some instances the collodion peeled off on drying, in others it did not. One of these pictures I shall send you for examination, probably you can explain the cause, on seeing it; it has evidently been caused by some peculiar state of the iodide of cadmium used, as nothing of the kind has been produced by the other bottles of iodide.

I trust that you will not find my letter a bore, if you do, throw it away; if not, make such use of it as you think it may deserve. I shall write again, in all probability, about June, or July, as by that time I trust I shall be enabled to give you the results of some experiments in which I am now engaged.

I regret to say that, owing to a large number of operators traversing the country, the photographic business is pretty well ruined, as to a fair price or an amount of work. This city, which will hardly support one establishment, has four; and apart from this there are some three or four young men who have learned the business (with a vengeance!), and are now working hard to break it up entirely.

At the present time I am preparing to take advantage of the dry weather for a trip up towards the Mexican frontier, to add to my collection of views and Indian costumes.

A good, simple, dry process would be of great service to me, but as yet I have met with none that gives me the desired results, without being too complicated to work with in a country like this, where an artist has a thousand difficulties to encounter, that are not dreamed of by our friends at home.

Guatemala, March 6th, 1862.

THE NITRATE OF URANIUM BATH.

This toning bath is the best, but like all alkaline baths requires great care in the manipulation. It will produce those tones of black and white, so desirable in the *cartes de visite*.

Float the albumen paper in a solution of 90 grains of silver to each ounce of water, having previously added a few drops of strong aqua-ammonia, to neutralize the acid in the nitrate of silver. Let it settle a few minutes, and filter. Prepare three solutions as follows:—

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| No. 1.—Chloride of gold | ... | ... | 15 grains |
| Or, one bottle of the ordinary chloride of gold. | | | |
| Water | ... | ... | 2 ounces. |

Neutralize with bicarbonate of soda.

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| No. 2.—Acetate of soda | ... | ... | 100 grains |
| Water | ... | ... | 1 quart, or 32 ounces. |

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| No. 3.—Nitrate of uranium... | ... | ... | 15 grains |
| Water | ... | ... | 2 ounces. |

Bicarbonate of soda sufficient to neutralize the acid, which may be known by test paper.