The photographic news
London, Cassell, Petter, and Galpin.

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off a bridge was suspended between the parapet and the river, and never fell any further. If any copies of the abortion survive, no doubt she is there still, not an inch nearer to the water yet. In like manner some of these instantaneous attitudes are bad art, not only because they are unreal, but also because they are forced into an unnatural and incongruous existence,—they are only possible as rapid transitions from one pose to another, yet they are isolated and perpetuated on paper which can never change or explain them.

COLLODIO-BROMIDE EMULSIONS.

BY F. C. BEACH.*

MR. L. C. LAUDY, of the American Museum of Natural History, Central Park, New York, a well known worker in the collodion processes, has, at my request, kindly given in a formula which he obtained from Mr. Newton, and which, he says, at the time it was used they kept secret. He says they regarded Mr. Newton, in those days, as the "shining light" in this country on collodion emulsions. The formula is very practical and gave beautiful results, and all looked for a great future in collodion emulsions, until one day gelatine emulsions appeared, and the glory of the beautiful collodio emulsion departed. The following are the particulars as given by Mr. Laudy.

For Newton's emulsions, use Hance's delicate cream cotton.

Bromide Emulsion.

Formula for one ounce.

Silver nitrate 18 grains to the ounce. First dissolve in 10 drops of water, then add 5 drops nitric acid for each ounce of solution, then add ½ an ounce of alcohol in which is dissolved 12 grains bromide cadmium, then add 6 grains of cotton, shake well and add ½ an ounce of ether; let it stand twelve hours, then add 4 grains chloride calcium.

Bromide Iodide Emulsion.

Formula for two ounces.

Silver nitrate (crystals) 30 grains, dissolve in 20 drops of warm water, then add 10 drops nitric acid.

Alcohol	1 ounce
Bromide cadmium	18 grains
Iodide ammonium	2 „
When these are dissolved, add cotton	12 „

then add the silver solution and shake well, then add 1 ounce of ether and let it stand twenty-four hours, then add 8 grains of chloride cobalt, dissolved in a little alcohol. If the iodide is not used, let the amount of silver be 28 grains, and add the chloride cobalt after the emulsion has stood for sixteen or eighteen hours. Plates thus made with this emulsion may be at once exposed in the camera after coating, and be developed with the following developer.

Make a saturated solution of neutral oxalate of potash in water, then add to each ounce 15 grains of pulverized protosulphate of iron, and lastly, just enough citric acid to the solution to turn litmus paper red.

But if the plates are to be preserved in a dry state they should be put in a special solution made as follows and called

Japan Tea Preservative.

Saturated solution Japan tea in alcohol	1 onuce
Water	16 ounces

The tea solution is prepared by soaking one ounce of Japan tea in six ounces of alcohol, let it stand until a strong tincture of tea is made, then add one ounce of the tincture to sixteen ounces of water. Or better, make a saturated tincture of tea in alcohol, and add two or three drops to each ounce of bromide emulsion. After coating, simply wash the plates in one or two changes of water until the oily lines disappear, and rear up to dry.

To make the plate more sensitive when it is desired to expose it in the camera, while wet flow over the surface the following accelerator:—

Water	12 ounces
Sal soda	180 grains
Bromide of ammonium	2 „

Mr. Laudy has also sent me a copy of Mr. Newton's printed directions concerning the use and manipulation of the plates. His developer, called a stock solution, is prepared as follows:—

Water	10 ounces
Yellow prussiate potash	1 ounce
Carbonate of soda	100 grains
Bromide of ammonium	15 grains

* Continued from page 92.

After exposure the plate is washed under the tap a few moments to remove the preservative; then the developer, consisting of half an ounce of the above solution, to which four grains of dry pyro has been added, is poured on. The image soon appears, and the development is accelerated by the air by frequently pouring the developer off and on. If more intensity is desired, add to the developer a little more pyro. Fix in hypo solution one ounce of hypo to four of water. Give the plate a good washing and set up to dry. When dry, varnish the plate to protect the film.

Dr. J. J. Higgins tells me the formula he used successfully is that which was employed by Mr. Albert Levy, and known as Levy's emulsion.

In the *Photographic Times* of September 4th, 1885, Mr. Levy thus describes his method of working.

I will explain the manipulations in the way I think is the most practical, and by following them closely success will be certain.

For 54 ounces of emulsion mix the following:—

A.—Bromide of cadmium...	... 648 grains
Alcohol (absolute)	... 18 ounces
Iodide of ammonium...	... 162 grains
Cotton (Hance's)	... 586 „
Ether (concentrated)...	... 27 ounces
In another bottle—	
B.—Nitrate of silver	... 600 grains
Distilled water	... 360 drops
Alcohol	9 ounces
Nitric acid	... 270 drops

Pour A into B, and leave exactly ten hours, then add 99 grains of green chloride of copper.

The excellent flowing qualities of my emulsion, its sensitiveness, &c., I ascribe, first, to the minimum quantity of water I put into it, and also to the correct measurement and timing.

First, I would advise to weigh out the required quantity of bromide of cadmium, and then desiccate this in a porcelaln capsule on a gentle heat. It will first soften and boil, and the heat must be applied so that the bubbles do not blow any out of it and change the quantity, however small the loss, as every particle is closely calculated. Then it will form in a lump (I forgot to say that during this evaporation the bromide should continually be stirred with a strip of glass, so as to prevent its adhering and consequent burning), when, by continuous stirring it will granulate, and this should be pushed long enough, until the granulation is fine enough and powdery, showing that all the dampness has gone.

This powder, well scraped out of the capsule, is put into one-half of the given quantity of alcohol and shaken until well dissolved. The iodide of ammonium is now added. This should be of a light yellow colour. When this is melted, add to it the cotton and shake well, after which the ether is added, and another good shaking given.

This first operation in one of the bottles previously well cleaned. It is well to have the bottles about twice as large as necessary, as it allows better shaking, and of course mixing.

In the second bottle put the nitrate of silver, and the water (which must be counted by actual drops, and not measured), the actual amount of which must dissolve the silver; but as it will not do it while cold, it must be gently heated until the required result, when the second half of the alcohol is added. On a small quantity the addition of the alcohol leaves the solution transparent, but on a larger quantity the silver is precipitated. This does not in any way affect the result.

All of these manipulations may be performed in full daylight, but the subsequent ones must be done in the dark room.

After having well shaken the silver solution, add to this the collodion in small quantities of four drams to an ounce at a time, shaking very well at every new addition, until all is transferred.

The emulsion is now almost finished, and should be shaken occasionally during ten honrs (exactly, neither more nor less), when the chloride of copper is added, giving a thorough shaking again, so as to dissolve it well, and also for other reasons.

Before adding the chloride of copper it must be put in a capsule and well evaporated. This can be easily perceived by the colour, which must be thoroughly brown when fully dried. Contrary to the bromide, the chloride should and must be weighed after the drying process is gone through. I may add that the dried chloride will keep very well in that condition if placed in a well-closed glass-stoppered bottle. If it gets green it must be again evaporated.

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Filtering now is advisable through Japanese filtering paper or cotton, when the emulsion is finished. The preservative is composed as follows :—

Preservative for 44 ounces.

Tincture nux vomica	100 drams
Tincture scillae	42 „
Tincture cochineal	120 „
Honey	20 ounces
Acetic acid	20 drams

Of the above take 22 drams and add 64 ounces of water.

After coating the plate, allow the film to set well, and then rinse in water before applying the preservative. Dr. J. J. Higgins also gives me his formula for developing the above-made plates as follows :—

Carbonate soda	½ pound
Ammonium bromide	640 grains
Water	2 quarts
Honey	1 ounce

The above is strong for extra cases. When diluted one-half it forms the usual normal developer.

To half-an-ounce of the above, add a mustard-spoonful of dry pyro previous to applying to the plate.

It will be observed in these various formulæ that considerable restrainer is added to prevent fogging, which is quite different in the case of the gelatine plate. If the alkali and pyro are poured on a collodion plate without containing a restrainer, the film will darken almost instantly. Very little practice is required to obtain excellent results, and I hope the reviving of this subject may lead to further improvements, especially when it is noticed that collodio-emulsions for orthochromatic work is being agitated.

A PERMANENT TEN PER CENT. HYDROQUINONE FORMULA.

BY J. B. B. WELLINGTON.*

THE subject of hydroquinone has been so much written and talked about that it is pretty well done to death by this time ; but as the season is just upon us when we shall all be ready to rush out into the country to secure some fresh scenes which perhaps may have escaped our notice before, this, then, will be the time when hydroquinone will have to fight its brother on the battle-field of developers. I am not going to say at present that I prefer this chemical to pyro until I have had greater experience in its use ; but when I use pyro and ammonia, or soda, I am inclined very often to cry out "Good old pyro !" and I am sure many besides myself here will agree with me that it requires a good deal of beating. However, in many hands hydroquinone is capable of producing quite as good results as any other developer, and, moreover, it has the quality which I am sure many will hail with delight, that it does not stain the fingers, and the negatives produced by it are of a brilliant and clear character, which makes them extremely useful during the dull winter months for quick printing.

Of the chemistry of hydroquinone I do not intend to touch this evening, as it is quite outside my sphere. I must leave this side of the question to my friend, Mr. Levy, who has already given us valuable and interesting information respecting its nature, and who has, I know, a great deal more to say respecting it.

Hitherto all the formulæ that have been published have been rather too bulky—that is to say, that it was impossible to get a very large proportion of hydroquinone into solution owing to its being sparingly soluble in water. This, of course, is a serious drawback, not so much to a portrait photographer as it is to the tourist, who, of course, requires that everything should be in as concentrated a form as possible.

In some of the early formulæ alcohol has been recommended as a solvent for hydroquinone, it being extremely soluble in the liquid—namely, to the extent of about 30 per cent—but it has this drawback, that the solution very soon becomes a very dark brown colour, almost worse than pyro in the same oxidised condition. In the formula I have just perfected, alcohol is still the liquid in which the hydroquinone is dissolved, and in order to preserve it from oxidation I employ sulphurous acid, which appears to keep it good without any change at all ; but I can only speak from three months' experience at present.

As it was the wish of the majority of members of the Photographic Club that some reform should take place in the weights and measures of formulæ, I have taken this opportunity of giving the proportions of this new ten per cent. hydroquinone in the French measures—viz., grammes and cubic centimetres—pending their decision as to something better ; although extremely convenient and easy in use, I am afraid it will be a long time before the method becomes general, because as long as things continue to be sold by the ounce, so will formulæ be given in the same.

The formula stands thus :—

Hydroquinone	30 grammes
Spirit (meth.)	100 c.c.
Sulphurous acid	100 „
Water, sufficient to make	300 „
Sodium hydrate	30 grammes
Sodium sulphite	30 „
Water (to make)	300 c.c.

Take three c.c. of each solution, and fifty c.c. of water.

You will notice that I have endeavoured to keep the proportions in as round numbers as possible. There is nothing I abominate more than a complicated formula ; the simpler it is the better, not only in chemicals, but also in the proportions.

The strength I have given will develop a plate in about five minutes with normal exposure. The addition of bromide is not necessary. (I may say here that I have experimented with Thomas's plates only, so cannot say if the developer is suitable for other plates.) Potassium hydrate may be used instead of the sodium, but then a larger proportion may be used. By so doing you naturally get more sulphite of soda as well ; this tends to keep the developer clearer for a much longer space of time. I may just say that the sulphite may be left out entirely ; although the solution discolours a good deal, the appearance of the negative is just the same as though sulphite had been used.

I feel I have sufficiently exhausted the subject, at least from my point of view, as writing a paper to me is not such a work of love as carrying out experiments. However, one is always well repaid by the attentive manner in which a paper is received by members of the Photographic Club.

* A Communication to the Photographic Club.

Patent Intelligence.

Applications for Letters Patent.

3,309. WILLIAM JAMES SMITH, 11 and 12, Broad Street Corner, Birmingham, for "Improvements in Photographic Cameras for Use with Wide Angle Lenses."—February 25th, 1889.

3,347. HENRY WILLIAM TAUNT, 9 and 10, Broad Street, Oxford, for "Perforated Books for Exhibiting and Selling Photographs."—February 25th, 1889.

3,369. MARCUS KATTENTIDT, 77, Chancery Lane, London, for "Machine for Casting Gelatine Dry Plates."—February 25th, 1889.

3,398. JAMES HEBER TAYLOR, Little Trinity, Cambridge, for "Improvements in what are known as 'Instantaneous Photographic Shutters.'"—February 26th, 1889.

3,465. HENRI JULES LE BOULCH, 35, Southampton Buildings, Chancery Lane, London, for "Improvements in Processes for Reproducing Pictures and Designs."—February 26th, 1889.

3,532. THOMAS YOUNG, 28, Southampton Buildings, Chancery Lane, London, for "Improvements in Apparatus for Timing Photographfc Exposures and Taking Observations."—February 27th, 1889.

3,541. HENRY HERBERT, 119, Hartfield Road, Wimbledon, for "A New or Improved Photographic Camera."—February 27th, 1889.

3,542. HENRY HERBERT, 119, Hartfield Road, Wimbledon, for "A New or Improved Changing-back for Photo-cameras."—February 27th, 1889.

Specifications Published.

5,869. JOHN HARMER, Photographer, Wick, Littlehampton, Sussex, for "Improvements in Photographic Cameras."—Dated 20th April, 1888.

I add to the back frame of the camera, and make detachable or otherwise, as required, an opaque board or shield A, pierced opposite the lens with an aperture the full size of plate used and extending a suitable distance above or below and to either side,

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