

cannot," say the photographers, "try all these methods; our time is too limited, and yet there is no other way of separating the good from the bad." This is very true, and greatly to be regretted; and is the cause of many valuable formulæ being neglected, or rejected among others of no value.

Experientia est mater studiorum, say the Latins, and we photographers know very well that knowledge can only be bought by experience. But a sure guide is always valuable, and on this account we employ a portion of our leisure in carefully testing the formulæ recommended in different journals, and communicate the results to our readers.

There are three principal points which most of the formulæ published now-a-days tend to improve.

1st.—The process for taking permanent pictures without the salts of gold or of silver.

2nd.—A good dry process.

3rd.—The improvement of present processes with collodion, and in toning chloride of silver, either to render the collodion more sensitive, or better tone proofs upon albumenized paper.

The last processes are doubtless the most important in practical photography; for during the fashion for *carte de visite* portraits, a very sensitive collodion and a good toning bath for proofs upon albumenized paper, are valuable to know. We therefore commence with a study of them.

We know that in a good collodion process, it is the silver bath and the iron developing agent that are of the first consideration. As to the first, the suggestion of M. Laborde, to add free iodine, has been found a very good one; only a certain limit must not be surpassed, so as not to liberate too much nitric acid, which would injure the dark portions of the negative. In this case, the addition of a few drops of acetate of ammonia, or of a solution of soda, may be recommended, because, by their aid the free nitric acid is retained, and a little acetic acid (which by its organic constitution favours the vigour of the dark portions) is set at liberty.

If we add much of these salts, some acetate of silver is formed, which must be removed from the bath by careful filtration, because it tends to separate in microscopic crystals, and spot the negative. To avoid an excess of iodine, I like better to add some drops of tincture of iodine to the recently prepared silver bath, with some nitrate of silver which has an alkaline reaction, and with the necessary quantity of iodide of silver, known to every photographer. It is essential to prepare the silver bath in the *daylight*, in the sunshine if possible. It seems to me that by these means the principle of the formation of veils, or fogging, may be removed. The iodide-nitrate of silver which is formed, and which is extremely sensitive, is partially decomposed, and a little iodine and nitric acid disengaged. And also all useless matters present, and which may cause fogging, are decomposed, and put out of the way of causing injury. We immediately perceive that the iodide of silver (which at first must be in excess in the bath) blackens, which it never does so energetically or so rapidly if it is not in contact with nitrate of silver.

The addition of formic acid to the silver bath is of no value, as the negatives are completely fogged by it. We can always add this acid to the iron developing solution, taking care to add also some acetic acid.—*Moniteur*.

(To be continued.)

DRY COLLODION.

BY M. L'ABBE' DELEAGE.

Collodion prepared with iodide and bromide of cadmium may be employed in the dry state. It gives results identically the same as those given by wet collodion. We can even employ it for portraiture: it will keep in good condition for at least a week, and even longer. This fact anyone may easily verify for himself. I shall, however, add some details which may serve to guard the photographer from the errors and failures into which I was led by prejudice, and the general directions given in most photographic treatises.

The necessity I have been under of operating quickly had always led me to avoid the tedious manipulations and slow development indicated for working with dry collodion; for this reason, when some months ago I read Mr. Saunders Van Loo's communication on dry collodion, I hastened to try afresh the resin formulæ of M. l'Abbé Despratz, which I had previously tried without success. I also employed collodion without resin, and the satisfactory results I obtained on many occasions satisfied me that even with ordinary collodion we may obtain successful results.

But I was ignorant of the composition of the collodion I employed: it was a mixture of all the residues of previous operations with collodions of different formulæ. This was the first point to be elucidated.

I tried various formulæ in succession; collodion with excess of alcohol; collodion with excess of ether; excess of iodide of cadmium; excess of bromide; various quantities of pyroxyline; alcohol more or less anhydrous, &c. Finally, I became convinced that the best collodion to operate with in the dry state, was also the best for the wet. How is it then that every photographic treatise has gone on repeating that ordinary collodion does not give good results in the dry state. (I speak of such treatises as I have studied). And why have amateurs taken so much trouble to modify it. I believe that I have discovered the reason in the fact that there are certain difficulties peculiar to dry collodion, and which I have often encountered.

Numerous transparent round spots, having a black point in the centre, often cover the finest negatives at the moment of development. These spots have been described in treatises on wet collodion; they are easily avoided by careful filtering. But it is not the same with dry collodion. These spots are produced whenever the sensitizing is performed in a shallow dish. As we are consequently compelled to agitate the dish to make the liquid cover the plate, particles in the atmosphere, deposited on the surface of the bath, are brought into contact with the humid collodion, and adhere to it. If we operate with wet collodion these particles have not time to decompose the iodide of the collodion film; but with dry collodion this effect is invariably produced. It is therefore necessary to sensitize in an ample bath. I use a bath containing 16 or 18 ounces of nitrate solution for half plate negatives, and I never am troubled with these spots.

On the other hand, a black veil generally covers at least one of the corners of the plate, and sometimes spreads very far into the film. These changes in the sensitive film, which become manifest only at the time of developing, can very easily be avoided by concluding the washings of the sensitized plates by a last washing with water, to which acetic acid has been added, in quantity that will be greater in proportion as the temperature is high, and when we desire to keep the dry plates a long time.

Still I have obtained the best results by adding acetic acid to the silver bath itself. The sensitized collodion keeps better. And while plates prepared with a neutral bath give bad negatives at the end of four or five days, I have succeeded in keeping them good eight days, after sensitizing them in an acid bath. To sum up:—

1. Employ ordinary collodion, with iodide and bromide of cadmium.
2. Sensitize in the ordinary nitrate of silver bath 7 per cent., which may be modified with 5 per cent. of acetic acid.
3. Wash freely under a fine stream of rain or river water, and conclude with a washing with distilled water, to which from 1 to 5 per cent. of acetic acid has been added. This washing with acidulated water is strictly necessary only when the nitrate bath is not acid.

These washings can be performed in successive dishes, by which the operation is accelerated.

I employ water for washing as pure as it can possibly be obtained.

4. Leave the plate to dry in the dark. Besides, the plates while wet, after being washed, yield the same results, and per-