time, have been associated with iodide of silver upon the sensitive film, I first prepared a film of inert iodide, that is to say, rendered inert by an excess of alkaline iodide and exposure to light; then I carefully washed it. In this state the iodide of silver is wholly unacted upon by the developing solutions, even after a long exposure, but if the smallest quantity of a soluble salt of silver be added—the nitrate, for example—it becomes sensitive and proper to receive a latent image in the camera. I had no occasion to verify this fact, it is familiar to every photographer, but I submitted to experiment acetic acid, the gums, albumen, gelatine, sugar, honey, solutions of resins in alcohol, spirits of turpentine, and certain bodies, such as salicine, alloxantine, &c. None of the substances rendered iodide of silver sensitive to light. But it was not so when I employed tannin, suggested by Major Russell: this body communicates to insensible iodide of silver, that is to say, completely free from nitrate of silver, a sensibility at least equal to that obtained from nitrate of silver itself. Tannin is therefore a *sensitizer*, and it must be regarded as such and not as a *preserver*, as all the substances are termed which are employed to preserve the sensibility of plates, or rather to prevent them from fogging completely in presence of developers in developing the negative picture.

We might have anticipated this property in tannin, since in the method that succeeds the best for preparing dry collodion for the tannin process, we entirely obliterate the nitrate of silver which covers the plates, by the final washing in water, recommended by the author of the process; in fact, this water containing alkaline carbonates and chlorides renders insoluble the last traces of free nitrate of silver on the surface of the plate; it is, moreover, by remarking this fact that I have been led to make the present task.

I thought that other very oxidizable bodies might possess the same properties as tannin, but I have experimented only with those I had at hand, and recognized that the solutions of sulphate of protoxide of iron, gallic and pyrogallic acids act like tannin. We shall, I am certain, discover others, which, alone or mixed, will prove more powerful sensitizers, perhaps, than the soluble salts of silver or tannin, which are the only ones employed hitherto. Perhaps new sensitizers will permit them to replace iodide of silver by other insoluble salts of this metal, and every thing leads to the belief that already bromide of silver employed alone, appears, under the influence of tannin, to be more sensitive than the iodide, at least, according to the statement of Major Russell.

I have wished to turn to practical account this purely theoretical but well-established fact—the sensibility communicated by tannin to iodide of silver—to avoid, if possible, all the causes of failure met with in the production of negatives, such as spots, fogging, insensible films, &c.—accidents which usually proceed from other reactions than that of light upon the sensitive iodide of silver, for they are due to the impurity of the materials, which give to the iodide of silver the property of exciting the reduction of the developing solutions. This modification takes place at the moment of the preparation of the sensitive film of iodide; or, rather, during the time, more or less long, which elapses between its preparation and exposure in the camera, and mostly during the development of the latent picture.

The method I propose is applicable to all known processes, whether we operate with waxed paper, albumen, gelatine, or wet collodion or dry: moreover, the actual and special purity of the materials, paper, collodion, and nitrate baths, will not be absolutely indispensable. This method has, it is true, been pointed out and adopted in part, but not from the same point of view—that is to say, the complete suppression of nitrate of silver as the final sensitizer of the iodide of silver.

The following is my method, in which I shall speak only of the employment of iodized collodion, having employed no other. I prepare this collodion in the usual way, adding 1½ per cent. of iodide to it—coating a plate, and sensitizing it in a nitrate of silver of bath, strength 8 to 10 per cent. For example, I wash the coating of iodide of silver, formed in order to remove the greater portion of the nitrate covering it; and what will probably surprise many operators is, that it is not necessary to perform this operation in the dark room.

The plate being freely washed, I cover it with a solution of iodide of potassium (about 4 of iodide to 100 of water), this solution being previously saturated with iodide of silver by the addition of a few drops of the solution of nitrate to the bottle containing it: moreover, this solution of iodide of potassium will serve until exhausted; and it is not necessary to make a bath, as it is sufficient to pour it again and again upon the film of iodide of silver and back into the bottle. I perform this operation in full daylight. And it is very essential to expose the surface thus treated to light for at least a few minutes. The object of this treatment is to destroy all germs of spots or fogging which come out during the final development.

I next wash the plate in plenty of water, to remove as much as possible the alkaline iodide, which has performed its task, and I then have a film of iodide of silver wholly insensible to light, and incapable of exciting the reduction of the developing solutions. To render the plate sensitive, it suffices to pour on its surface, *in the dark room*, the aqueous solution of tannin of 5 per cent. strength, it is then quite ready for exposure in the camera, and it is also as sensitive as a plate sensitized by nitrate of silver.

To cause the latent picture to appear, I wash the plate to remove the excess of tannin, then I pour upon the exposed surface a solution of aceto-nitrate of silver, of the strength of 2 or 3 per cent., and then the developer, sulphate of iron or pyrogallic acid. The development takes place precisely as in the usual methods, but what is no less remarkable than advantageous is, that we thus obtain with certainty, and without very great precautions, very clear negatives, vigorous and without spots.

Instead of employing immediately the film sensitized by tannin, it can be reserved for the dry process, as it will keep a much longer time than if the nitrate of silver remained on its surface. We can also prepare in advance plates with inert iodide of silver, leaving them to dry, and sensitizing them by the aqueous solution of tannin, or what in this case is preferable, its alcoholic solution; all these methods, I repeat, will give excellent results.

I give here one method only; all I can say is, that this method, which may be applied to all known processes, requires much less care, and particularly, chemicals less pure with respect to their special and chemical condition, than is required in the ordinary processes, in which nitrate of silver enters wholly, or in part only, into the sensibility of iodide of silver.—*Le Moniteur de la Photographie.*

PHOTOGRAPHIC CHEMICALS:

Their Manufacture, Adulteration, and Analysis.

Cadmium Salts (*continued*).—By far the most valuable compounds which this metal forms are those with chlorine, bromine, and iodine. Chloride of cadmium is best formed from the metal itself. As metallic cadmium is of great use in preparing these valuable photographic chemicals, it will be found convenient to keep it in the granulated form. To obtain it thus, take some of the metal and melt it in a clay crucible, either at a gentle heat in a fire, or, preferably, over a gas furnace. In the latter case it will be found advisable to conduct a stream of coal gas into the upper part of the crucible by means of a glass tube, and place the cover loosely on. The gas which escapes at the edge may be ignited. The object of this is to protect the surface of the melted metal from contact with the atmosphere, which would oxidize it, causing waste. When thoroughly melted, have ready a tall jug full of distilled water, then seize the crucible tightly with a pair of tongs, and pour the melted metal in a thin stream from a height of about two feet, into the water. The cadmium will form a very bulky granulated