

the organic matter act upon each other, and the lake of sulphide of silver substitutes for the black-violet colour of the sulphide its own yellow tint.

Such are the successive phenomena produced upon the surface of a print if it has been toned in a sulphur bath; if, by imperfect washing, it has been left impregnated with hyposulphite of soda; and, lastly, if it be placed, after insufficient toning, where it may be exposed to the exhalations of sulphuretted hydrogen exceptionally abundant.

Restoration of faded prints. The question of the restoration of prints had, at the time when we first occupied ourselves with it, in 1855, a very great importance. At the present day, however, that importance is much diminished, for we can show that alteration is abnormal, and is owing to imperfections in the preparation which nearly all photographers know how to avoid, and, therefore, the restoration of faded prints possesses but a secondary interest.

Let us now describe rapidly this operation. It consists, simply, in submitting the prints to a new toning. When placed in a solution of gold, a faded print will tone and colour again like a print recently prepared, but more slowly. It will regain here a portion of the brightness which it had lost, but he will be deceived who expects that all its former freshness will be restored. As we have said above, the lake of sulphide of silver and organic matter is slightly soluble, and, consequently, the more delicate half-tones will, after their change to the yellow state, be destroyed by the action of the water, and they cannot be restored. Moreover, there are no faded prints in which some of the lighter portions will not be found tinted with yellow, doubtless in consequence of an alteration in the albumen with which the paper is covered; perhaps, too, owing to the presence of silver which the imperfect washing has failed to remove, and in the restoring bath this yellow tint will not disappear. On the contrary, it will rather increase, and if we, to remove it, submit the restored print to the action of chlorine or chloride of lime, these agents act also as on the thinner portions of the metal forming the image and destroy the half-tones.

However this may be, the use of the salts of gold yields under ordinary circumstances very satisfactory results. It removes the yellow tints of faded prints, substitutes for it the black or violet, and, more than all, prevents further change by replacing the silver surface, highly susceptible to the action of sulphur, by a surface of gold, which offers an almost absolute resistance to it.

The best mode of conducting the above operation is as follows:—The print is removed from the cardboard to which it is attached and immersed in water until saturated, then left for four or five hours in a neutral solution, recently prepared, of double chloride of gold and potassium, the strength of which may vary from $\frac{1}{1000}$ to $\frac{1}{500}$. The stronger it is the more rapid is its action. When the colour appears to be sufficiently restored the print must be washed in ordinary water, while washing, as well as the immersion in the gold bath, should take place in the dark. When washed the print must be placed in the hyposulphite solution to remove the chloride of silver formed by the double composition, and finally washed again in water in the usual manner.

PHOTOGRAPHS AND MEMORY.

The distinguished Dr. Draper, of the New York University, thus speaks of the impressions made by light:—

“If after the eyelids have been closed for some time, as when we first awake in the morning, we suddenly and steadfastly gaze at a brightly illuminated object, and then quickly close the lids again, a phantom image is perceived in the infinite darkness before us. We may satisfy ourselves that this is not a fiction of the imagination, but a reality; for many details that we had not time to examine in the momentary glance, may be contemplated at our leisure in the phantom. We may thus make out the pattern of such an object as a lace curtain hanging in the window, or the branches of a tree beyond. By degrees the image becomes less and less distinct; in a minute or two it has disappeared. It seems to have a tendency to float away in the vacancy before us. If you attempt to follow it by moving the eye-ball, it suddenly vanishes.

“Now the condition that regulates the vanishing phantom-images on the retina is, that when they have declined in vigor to less than $\frac{1}{16}$ th of the intensity they had while in presence of the object that formed them, they cease to disturb the sight. This principle is illustrated when a candle-flame is held opposite to the sun, or any light having more than 64 times its own brilliancy. It then ceases to be visible. The most exact of all known methods for measuring light—that by the extinction of shadows—is an application of the same principle.

“But the great fact that concerns us is this:—Such a duration of impressions on the retina of the eye demonstrates that the effect of external influences on nerve vesicles is not necessarily transitory. It may continue for a long time. In this there is a correspondence to the duration, the emergence, the extinction of impressions on photographic preparations. Thus I have seen landscapes and architectural views taken in Mexico, ‘developed’—as artists say—months subsequently; the images coming out, after the long voyage, in all their proper forms and in all their contrast of light and shade. The photograph had forgotten nothing. It had equally preserved the contour of the everlasting mountains and the passing smoke of a bandit fire.

“Are there then contained in the brain more permanently, as in the retina more transiently, the vestiges of impressions that have been gathered by the sensory organs? Do these constitute the basis of memory—the mind contemplating such pictures of past things and events as have been committed to her custody. In her silent galleries are there hung micrographs of the living and the dead, of scenes that we have visited, of incidents in which we have borne a part? Are these abiding impressions mere signal-marks, like the letters of a book, which impart ideas to the mind, or are they actual picture-images, inconceivably smaller than those made for us by artists, in which by the aid of a microscope, we can see, in a space not bigger than a pin-hole, a whole family group at a glance?

“The phantom-images of the retina, as I have remarked, are not perceptible in the light of day. Those that exist in the sensorium, in like manner,