

# THE PHOTOGRAPHIC NEWS.

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### FADING OF PHOTOGRAPHIC PRINTS.

THE cause of the fading of prints is continually cropping up, and we suppose will do so till prints on albumenized paper are things of the past. In the early days of printing, we call to mind the exhaustive experiments undertaken by Mr. Hardwich, and also the additional evidence as to the nature of fading, brought forward by Mr. Spiller; and we believe that not much further knowledge of the matter has accrued since those early days. The usual idea of the cause of fading is, that thorough washing has failed to eliminate the hyposulphite from the interior of the paper, and from the albumen, thus leaving a sulphur compound in contact with metallic silver. Mr. Spiller, however, showed that the silver liable to be acted upon by the hyposulphite was an organic compound, the sulphide of which is yellow, thus disclosing the real cause of the disappearance of the image. It must also not be forgotten that by using a weak fixing bath it is possible to form an insoluble hyposulphite of silver, and thus to form a nucleus for decomposition.

Recently we have had a proof of a fading of the image on a gelatine plate, which we trace to somewhat the same cause. The plate was developed in the ordinary manner by the alkaline developer, and then immersed in a dish of hyposulphite of soda. It was taken out before the fixing was complete, but the bromide was apparently dissolved by the hyposulphite left in the film; it was then placed in a dish of water, and after two or three changes, was taken out and allowed to dry. After remaining exposed to light for some days, a gradual fading of the image was observed, and a yellowing of the transparent parts near that margin of the plate where the image was not completely fixed whilst in the dish, but where all the bromide had subsequently been dissolved. A test applied showed that we had a sulphide of silver present, and presumably, an organic sulphide, though not necessarily, since we have observed the same yellowing of the image on a collodion plate in which only harmless organic matter was present.

In the case of the gelatine plate, it is manifest that the hyposulphite became decomposed and gradually attacked the image formed of metallic silver, and this is analogous to the fading of the dark image in a silver print, whilst the yellowing of the whites in the latter is due to the decomposition of the organic salt not dissolved away. In the gelatine plate, no doubt, had the fixing been completed in the usual manner, this would not have happened, since soluble hyposulphite of silver would have been formed, and subsequently washed out. With a silver print, the case is somewhat different; the image is formed in a great measure of "albuminate" of silver, and it is not always possible to dissolve this substance out of the film. Perhaps the application of common salt to the print before fixing would render it more nearly in the same condition as the gelatine plate. There are, however, organic compounds of silver

which are perfectly soluble in hyposulphite; amongst these is the citrate of silver which Mr. G. W. Simpson introduced in his collodio-chloride process, though he used it in a somewhat roundabout way, by adding citric acid and nitrate of silver. Now, there are various experiences regarding the collodio-chloride process; some have it that the prints obtained by this method fade, whilst others maintain the contrary. We have before us several dozen prints produced some fifteen years ago on collodio-chloride, and they are as fresh as the first day on which they were printed. The whites are pure, and the toned image unenfeebled. The support used was paper enamelled with barium sulphate in gelatine, and the collodio-chloride flowed on to this—silver nitrate being in excess. Paper coated at the same time, but not used, is of an orange yellow; but the enamelled paper beneath is perfectly white. The fact is, that when we prepared this paper, the gelatine was thoroughly hardened by chrome alum, and rendered repellent of water, so that any moisture in the collodion film above it did not carry to it any of the silver salt. Glass positives which were prepared at the same time are also intact; whilst collodio-chloride prints in which the collodion film was placed on an albumenized surface are faded. Here, then, we see that the support has a marked influence on the permanence of the image. By the use of an impermeable support all deleterious matter can be washed from the film, whilst from an absorbent support it cannot. One more fact is interesting: we have prints made with collodion containing an excess of citrate of soda, instead of an excess of nitrate of silver. They are not so vigorous as when the silver salt is in excess; but whether the support used for holding the emulsion was the enamelled paper or the albumenized paper, the prints have remained unchanged, tending to prove that it is the excess of the silver salt which is deleterious. We propose to return to this subject.

### THOROUGH WASHING AND EFFECTUAL FIXATION OF GELATINE NEGATIVES.

#### SECOND ARTICLE.

THE article on this subject which appeared in our issue of the 23rd of last month has served to make many of our readers look back on their stock of negatives, and it is surprising to find how many defects and annoyances were traced to the presence of sodium hyposulphite.

In the first place, many plates which have become stained by silver during the printing were, when examined, found to contain very notable traces of the fixing salt. Although in many cases the silver had only gained access to the film through minute holes in the varnish, it was found that it had spread in the gelatine film, far—indeed very far—beyond the limits of the original aperture. It is