

transcripts of these details are unattractive, and the photographer must either overcome the difficulties of composition, and obtain breadth of light and shade for his own picture, or else let it be used by the painter, who can give it the added charm of colour. Photographic studies of waves, trees, and plants are already much used by artists, though they can seldom be got to fulfil the exact purpose wanted.

The artist feels that by working up his tree from a tree he has bought in a shop he runs a great chance of being commonplace; if he could get a photograph of his own individual tree, it would be quite another story. A critical friend may tell him he ought to go back and work from the tree itself, but this may be impossible; it must be impossible in the case of ferns and flowers, which have changed even while he was making his sketch. Really his best hope lies in a photograph of his subject taken on a calm day from his own point of view.

To get a photograph done for himself is his best chance. If photographs done for other purposes are to be used, they must be offered in great variety, so that he may have a chance of finding a branch or a fern like that in his pictures.

In recommending the use of photography in landscape painting, I should like it to be understood that I propose it as a help in practice, not as a means of study. A man who cannot paint a picture from nature will never be able to paint one from photographs, and though an experienced artist may do well to take as many sketches as he can during his summer tour, and work them up with the help of memory and photographs, a student had much better stick to his subject in the open air. A certain evil odour hangs about the use of photography by artists, from the number of men who have thought it would save them the trouble of drawing, and so have produced pictures with neither the accuracy of photographs nor the originality of paintings.

Of the various ways by which an artist might be helped by a photographer, the most effectual would be a working partnership in which the photographer would make negatives of particular subjects for the future use of the artist; but besides this, the photographer might do much by producing such negatives as he thought likely to be useful to his artistic brethren. Not being myself a professional photographer, I cannot tell what would be the probable pecuniary advantages of such working, but I believe that the demand would increase with the supply much more rapidly than the laws of political economy would lead one to expect. At present, even when one artist would gladly get a photograph to work from, he is deterred from doing so by the very small choice, and the probability that some other artist is working or has worked from the self-same photograph.

The photographs most likely to be used by artists are, I think, studies of single figures in attitudes, remarkable either for their grace or for some peculiar difficulties of drawing which they illustrate, as figures engaged in rustic occupations. Amongst landscape subjects, I believe that any photographs of trees or plants done on a large distinct scale in calm weather would be very welcome in many an artist's portfolio. Clouds, too, might be of use, though the very limited cases in which they can be taken must lessen their utility.

I cannot too strongly urge a partnership of the painter and photographer; their identification I do not suggest. In either art, only really good work is of use, and considering that Titian at the age of ninety-nine only considered that he was beginning to understand one art, an ordinary man in an ordinary lifetime can hardly hope to master two.

THE REDUCTION OF OVER-EXPOSED SILVER PRINTS.

BY ARNOLD SPILLER.

It is quite a questionable point amongst photographers as to whether it is worth while reducing over-printed proofs,

yet in large establishments, what a large proportion of prints are really cast aside from over-printing! The substance usually employed as a solvent of the silver (and gold) image is potassium cyanide. A wide difference of opinion exists among experimenters as to the exact strength of the solution to be employed for the purpose. Some two years ago Mr. England stated in the columns of the *News* that a suitable solution could be prepared by dissolving two grains of cyanide in a pint of water, the prints being kept in the liquid for from one to two hours. About the same time I made several experiments with the salt in question, but the results were hardly satisfactory, for although in some cases the reduced prints were all that could be desired, very often zigzag markings made their appearance, showing uneven reduction. Fairly uniform results were obtained by adding the cyanide to the fixing bath, but for my own part I prefer to work as little as possible with this poisonous salt.

After experimenting with ferric and other saline solutions, I found that a mixture of chromic and nitric or hydrochloric acids, when sufficiently diluted with water, reduced silver prints evenly, quickly, and without the disagreeable property inherent to the cyanide bath. I make up the following stock solution:—

Potassium bichromate	10	grains
Nitric or hydrochloric acid (strong)			$\frac{1}{2}$	dram
Water	10	ounces

The reducing solution is prepared by diluting one ounce of the above with a pint of water. When hydrochloric acid is used, the prints must be immersed in the bath previous to fixing, in order to dissolve the silver chloride which is necessarily formed by the reaction of this acid on the silver chromate; but when nitric acid is employed, no after fixing is required, as the silver nitrate formed is soluble in the liquid.

When using the hydrochloric acid solution, it is necessary to withdraw the prints from the bath before the reduction is complete, as the image continues reducing in the fixing bath; therefore I prefer the nitric acid method, as when once the proofs are removed from the latter solution into the wash water, the reduction ceases.

The mode of working with the nitro-chromic solution is as follows:—The silver prints are taken from the fixing (hyposulphite) bath, and washed in several changes of water for about half-an-hour; they are next immersed in the reducing solution till the desired result is obtained; the proofs are then withdrawn, and placed in running water for some twelve hours. It may be noted that by treating the prints after fixing with an oxidising agent, the hyposulphite—or, rather, thiosulphate—is converted into bisulphate, a substance much less liable to cause fading of the image.

With regard to the length of time necessary for keeping the prints in the nitro-chromic bath, much depends on the extent of reduction required, and it is impossible to give exact directions on this head; but in my own experience from ten to twenty minutes generally suffice. As the gold deposit is dissolved more quickly than the silver, prints intended to be reduced by this method should be somewhat over-toned.

PHOTO-LITHOGRAPHY AND PHOTO-ZINCOGRAPHY.

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CHAPTER VI.—THE PREPARATION OF THE PHOTO-TRANSFER PAPER—(continued).

ONE very great objection to the transfer processes of photo-lithography is the difficulty of accurately preserving the scale of the original, owing to the distortions caused by the unequal shrinkage or expansion of the transfer prints in the various wettings, dryings, and squeezings they have to undergo before transfer. In this way much of the