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DISCREPANCIES IN EXPERIMENTAL RESULTS—SULPHOCYANIDE IN TONING—THE MORPHINE PROCESS.

ONE of the most perplexing things to a conscientious scientific journalist is the occasional recurrence of the most singular and inexplicable contradictions in the recorded experience of gentlemen in every way entitled to trust, both as regards honesty and capability. It is not simply the difference of opinion or judgment as to the best mode of effecting a certain thing which is perplexing. It is not that one prefers a lime toning bath, and another prefers carbonate of soda with his gold; that one swears by the gelatino-iron developer, and another swears at it; that one prefers Taupenot, and another tannin: all these and many more things admit of difference in judgment or opinion upon easily explainable grounds. But when A. writes and minutely describes a process which has given him excellent results, and B. writes to say, "I have tried A.'s process, following his formulæ and instructions, and fail to get any result at all," the case becomes very difficult to deal with; and when the Editor is asked to explain the cause of the discrepancy, or of several such discrepancies, he is tempted to rush off and enjoy that holiday of at least a clear week which he has been promising himself for the last seven years, but has never been able to obtain.

In sober seriousness, such discrepancies are perplexing, and we feel a difficulty in even suggesting a cause for their existence. Here is an example: some weeks ago we described the result of some experiments with a toning bath of sulphocyanide of ammonium and chloride of gold with which we got exceedingly fine results. We tried the bath with albuminized paper, with "leptographic" paper, and with collodio-chloride paper, in all cases successfully. We tried with almost every proportion of sulphocyanide in relation to gold; and in no case with failure. The tones produced had special peculiarities which pleased us, and we described the results fully. Shortly afterwards we received several communications, some from unknown correspondents, some from correspondents well-known and highly esteemed. Some confirmed our experience; but several others wrote, in disappointment, to say that they had utterly failed to secure such results as we had described. They had followed our instructions to the letter, and, instead of the rich tones of rosy black we had obtained, their prints refused to go beyond a dirty brown, and after prolonged immersion, a few irregular patches of inky blue or black appeared in the midst of the dirty brown. One correspondent sent us examples of these discouraging results; and true it was that the pictures were as bad as bad could be, notwithstanding the assurance which accompanied them that they had been subjected in every particular to similar treatment as that which had given us very beautiful tones indeed. We

could give no answer of a definite kind to these statements. It might be some peculiarity in the paper used, it might be from some peculiarity in some of the other materials. To aid in ascertaining where the defect might be we invited any correspondent who had met with this difficulty to send us up an example of excited paper, or an untuned print, that we might try the effect of our own toning bath of sulphocyanide and gold. One correspondent did, a week or two ago, send us an example of excited paper, which we at once divided into four parts, and exposed under different negatives.

The paper, on reaching us, was a little yellow, and, after leaving the printing-frame, on careful examination displayed some tendency to mealiness; a slight mottle of grey and brown pervaded the whole surface, suggesting that particles of darkened chloride of silver and of darkened albuminate of silver lay side by side. We placed one print in an old toning bath of sulphocyanide of ammonium and gold which had been made some weeks and used several times, and to which, prior to using again, we added one drop of an 8-grain solution of chloride of gold. The print toned slowly, and at first showed the mottling, which had been slightly apparent in the toned print, in a marked degree. This, however, gradually passed off, and the whole print assumed a rich warm black tone, which it retained without alteration when submitted to the fixing bath of a fresh solution of hyposulphite of soda. We next made a new bath, slightly varying the proportions. Forty grains of sulphocyanide of ammonium were dissolved in four ounces of water, and to this solution a drachm of an 8-grain solution of chloride of gold was added. The remaining prints were toned in this solution, and although the operation was somewhat slow, apparently from the paper having a hard, horny, and impervious surface, each one gradually acquired a fine black tone, which was retained unchanged through the fixing process with fresh hyposulphite. The prints are before us now, of excellent tone, and ready for the correspondent from whom we received the paper, if he desire to see them.

We are, unfortunately, not much nearer a solution of the difficulty. We cannot tell now whether the defect is in the sulphocyanide of ammonium, or in the manipulations of our correspondent. We simply know that whilst the paper does not seem a very good sample, the failure in getting fine tones is not due to it. Possibly our correspondent was too impatient, and, using a weak toning bath, did not give it time. Possibly his sulphocyanide is defective. But there is the fact that in our hands, with both old and new toning bath, the results are excellent. We shall have pleasure, we may repeat here, in trying further examples of excited paper which may be sent from other correspondents who may have had similar difficulty with this toning bath.

The next case of discrepancy is of another kind, but quite as puzzling. An intelligent correspondent, having