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PHOTOGRAPHY IN AND OUT OF THE STUDIO

Nitrous Acid in Silver Baths—Chloride of Silver in the Negative Process—Bromo-Iodised Collodion for Reproductions—New Photographic Academy.

Nitrous Acid in Silver Baths.—It is now longer than ten years since photographers were warned of nitrate of silver containing nitrous acid. The latter is easily formed by fusing the nitrate at a high temperature, and it causes fog on the negative. Crystallized nitrate has been recommended instead of fused, in order to get this fault once for all out of the way. It may be doubted, however, whether this is really free from nitrite, inasmuch as several manufacturers subject the crystallized nitrate to melting at a low temperature to drive out the last trace of acid, and then crystallize once more. It is now the question whether impurities of the nitrate are due to nitrite or not. A large quantity of nitrite is easy to detect. If chemically pure sulphuric acid is poured on to a small quantity of the suspected nitrate, the nitrous acid is expelled and decomposed with formation of red fumes. Smaller quantities are more easily detected in the following manner:—The suspected nitrate is dissolved in water, precipitated with an excess of potassium iodide, and filtered. The filtrate is mixed with starch paste and pure sulphuric acid, till it is distinctly acid. The sulphuric acid then sets the nitric acid free, and this decomposes the iodide of potassium, setting the iodine free, which produces an intense blue colour with the starch. A thorough investigation has lately been made by Belitzky, to obtain a more accurate view of the action of the nitrite on a negative bath. Water only dissolves small quantities of silver nitrite, so that a silver bath can contain at the most 1 grain per ounce. Belitzky has made baths which contained 1 grain of nitrite in 1 ounce, 3 ounces, 4 ounces, 5 ounces, and 10 ounces of the silver solution. The result of working with these was, that if plates were quickly sensitized and exposed, and immediately developed, they gave no fog. When they were sensitized long, however, and the plate was allowed to stand some time in the dark slide, fog was formed, which became thicker the longer the plate was kept before developing. The fog formation ceased, however, if the baths were mixed with as much nitric acid as would completely decompose the contained nitrite, and leave a little nitric acid in excess. Here Belitzky calls attention to a circumstance which, in fact, has been also very often observed by us. If nitric acid is added to a silver bath till it has a weak acid reaction, and gives plates quite free from fog, then it is not seldom found that after some days the acid reaction has disappeared, and the bath gives fogs again. The question here is, what has become of the free acid? It is thought that the free alkali of the iodine salt of the collodion has neutralized it. Belitzky has proved, on the contrary, that prepared baths with nitrite added show this phenomenon to a striking extent. If nitric acid is added to such a bath, then nitrous acid is next set free; this has a strong acid reaction; in the course of time it decomposes, however, spontaneously, and then the bath has again a neutral reaction. The best remedy to get rid of nitrous acid in such baths may be to acidify with nitric acid, and to boil. By heating, the free nitrous acid decomposes quickly; if then the bath is not acid, it can be weakly acidified, to obtain a properly prepared bath.

Chloride of Silver in the Negative Process.—In the last ten years the use of bromide in collodion was patented in America. To evade the licence, it was proposed to put chloride instead of bromide in the collodion. In fact, the action of the chloride is similar to that of the bromide, if, however, not quite so favourable. No more attention was given to the matter when the bromine patent ceased. It is more surprising to hear that chloride collodion is yet used in practice in the Government printing office of Vienna, the excellent accomplishments of which in heliography are commonly known. The office uses iodo-chlorised collodion for their reproductions of drawings, and, as we are told, the receipt is excellent. Chlor-iodo-collodium is used for the preparation of glass negatives for linear drawings.

Bromo-Iodized Collodion for Reproductions.—It is known that pure iodised collodion gives a much more intense picture of clear objects—as, for example, the white linen in a portrait—than bromo-iodized collodion; that the latter, on the other hand, renders the shadows and dark objects more powerfully. Pure iodised collodion works hard. The conclusion has been drawn from this, that it must be excellent for the reproduction of linear drawings, since here only black and white is dealt with. That is, however, an error; for this object a more sensitive bromo-iodised collodion is decidedly to be preferred. Since the objective is strongly darkened, as this is generally necessary to obtain the greatest sharpness, the picture becomes so extraordinarily weak in light, that even the white paper ground of the picture on the plate has no greater clearness than the deep shadows and dark folds in a picture of a person with a portrait lens. Since, now, bromo-iodised collodion renders better the dark parts of a portrait than pure iodised collodion, it also gives the dark places of the reproduction better. We have, in fact, repeatedly made the experiment wiih a drawing in black-and-white, with pure iodised collodion and bromo-iodised collodion, and obtained nothing at all with pure iodised collodion in the time of an exposure which gave us an exquisite picture with bromo-iodised collodion. On this ground we cannot recommend the addition of baryta to the silver bath, which makes the bath harder, but also insensitive.

New Photographic Academy.—Austria has the honour of being the first State which, valuing the high importance of photography, has founded a school for photography and photographic chemistry, in Salzburg. This school is a division of the Local Government Trade Institute, which possesses a large studio with a spacious laboratory, a room for photo-lithography and Lichtdruck printing, a studio for photo-zincography and galvano-plastic and heliography, a chemical laboratory and a lecture-room, and teaches, besides the cited branches of photography, the positive and negative process, positive and negative retouching, the not-to-be-forgotten carbon process, ceramo-photography, etching processes, photo-enamelling, &c. The school provides even more: well-trained pupils obtain appointments, and you may follow the course of half-a-year at the very low price of twenty shillings. We would not venture to get the chemicals at this price which a pupil use in this time. Surely many young students will ardently make use of this new opportunity to study photography in Salzburg, perhaps the most beautifully situated town in Austria, if there is not sufficient attraction to spend a summer there. They will never find beautiful landscapes wanting there; they will often find, however, beautiful storms, as Salzburg is the most rainy place in the Alpine district.

LESSONS LEARNT DURING A MONTH'S TOUR ABROAD WITH GELATINE PLATES.

BY CAPTAIN W. DE W. ABNEY, R.E., F.R.S.*

As I said before, this is the first tour on which I had entirely trusted to gelatine plates. Will it be the last? The plates that I took with me, which were made by myself, were of two classes—very rapid, and comparatively slow plates. The former were about fifteen to twenty times more rapid than wet plates, and the latter about four times only. The comparison with wet plates is more true than is usually the case, since they contained iodide to the tune of 15 grains to

* Continued from page 473.