

sarily spoiled when fresh, a condition where the gelatine and silver particles are to a greater degree susceptible and ready to conform to the new condition brought by rolling under tension. The particles soon become set, and although the film is unwound for the exposure, long enough time is not allowed before exposure for the particles to again re-arrange; therefore the exposure is made when the gelatine and silver particles are in a contracted state. In development, the gelatine particles swell and assume about the same relation as when the emulsion was first spread upon the celluloid. Coarse, grainy and foggy negatives must be the result, and to this rough treatment of an extremely sensitive substance must be attributed a generous share of the rollable film failures.

Cut-sheet celluloid film, as before stated, is well seasoned before being coated with emulsion and is transparent and practically lies flat. Then what have we to contend with in manufacturing a reliable practical cut-sheet film having all the desirable qualities of a glass plate, and still embodying the two chief qualities, i. e., lightness and compactness? This, and nothing more, make the celluloid after seasoning inert and inactive to the bromide of silver emulsion and devise practical mechanical instruments in which to use it.

I believe this will be accomplished soon, and when it is, glass plates will be a back number for outdoor photography.—*Photographic Times*.

Blue Lantern Slides.

A good method to utilize spoiled dry plates is to use them for lantern slides. If the plates have not been developed, it is only necessary to fix and wash them thoroughly, then dry in the usual manner, after which they can be cut down to the standard size, and sensitized like ferro-prussiate paper.

Water 4 ounces
Red prussiate of potash 2 drachms
Ammonia citrate of iron 2½ drachms

This solution can be spread over the gelatine with a soft sponge. This coating must be done by a safe ruby light; the subsequent drying is best done in absolute darkness.

The plates when ready are exposed under the negative to daylight and developed by washing under a tap until the high lights are entirely clear. As the plates cannot be examined during the exposure, the time becomes a matter of experience and judgment.

A guide to the time of exposure may be arrived at by a trial exposure of ferro-prussiate paper.

It has been stated that plates spoiled in development or exposure can be utilized for the same purpose by treating the negative in a bath of

Water 5 ounces
Bichromate of potash 15 grains
Alum 1½ drachms
Hydrochloric acid ½ drachm

After being thoroughly bleached in this

bath the plate should be washed under the tap for fully twenty minutes, and then fixed in the usual hypo bath, which, if properly done, will completely remove the image. This must be done by artificial light. After fixing and drying proceed as above.—*American Journal of Photography*.

Pyro-Eikonogen Developer.

The following formula for a combined pyro eikonogen developer gives negatives of great softness and detail.

No. 1.

Sulphite of soda (cryst.) .. 60 parts.
Bisulphite of soda " .. 12 parts.
Eikonogen 15 parts.
Warm water 1,000 parts.

No. 2.

Sulphite of soda (cryst.) .. 200 parts.
Bisulphite of soda " .. 10 parts.
Pyro 50 parts.
Warm water 1,000 parts.

No. 3.

Carbonate of potash 150 parts.
Carbonate of soda 250 parts.
Warm water 1,000 parts.

For use, take water, 75 parts; No. 1, 20 parts; No. 2, 5 parts, and No. 3, 5 parts. To diminish density, increase the quantity of eikonogen; to increase it, increase the quantity of pyro. In fixing, use an acid bath.—*Phar. Journal of Australasia*.

Para-amidophenol Citrate Developer.

The *British Journal of Photography* gives the following:

The solution of citric acid is, according to Liesegang, an excellent solvent of para-amidophenol—97 grammes of the latter being soluble in 200 grammes of the citric acid solution of equal parts, the para-amidophenol being added little by little at a temperature of 18 to 20° C. The citrate of para-amidophenol so formed is employed as a developer in the following proportions:

Para-amidophenol citrate, concentrated solution 1 ccm.
Sodium sulphite, concentrated 4 ccm.
Sodium carbonate 5 ccm.
Caustic potash (10% solution) 2 ccm.
Water 50 ccm.

This gives dense blue-black images full of detail, the image, with normal exposure, appearing in about ten seconds. Brown tones are obtained if the para-amidophenol citrate is rendered alkaline with caustic potash. The citrate and sulphite are also applicable in aqueous solution as a developer for partly printed images on gelatino-chloride.

Detaching Gelatine Negatives from Glass.

Herr Liesegang's method of detaching gelatine films from the glass supports without employing the hydrofluoric acid plan is to introduce between the gelatine and the glass carbonic acid gas, which will affect the separation. The negative or

positive, after development, etc., is plunged into a bath made freely acid with either citric, hydrochloric, or sulphuric acid, and then, without washing, is placed in a concentrated solution (25 to 30 per cent.) of carbonate or bicarbonate of soda. The carbonic acid gas thus formed puffs up the gelatine, which can then be easily removed. The film undergoes some enlargement, which could probably be obviated by a bath of absolute alcohol, and when dry the film is perfectly flat, and can then be attached to a collodion or gelatine support as may be desired.

Boric Acid in the Combined Toning and Fixing Bath.

Herr Gaedicke, having experimented with eighty four different kinds of toning and fixing baths, recommends one containing boric acid. The additions of a lead salt is necessary. The following is the formula:

Distilled water 1000 c.c.
Hypo 200 grammes.
Boric acid 30 grammes.
Nitrate of lead solution 1:15 15 grammes.
Ammonium sulphocyanide 20 grammes.
Gold chloride solution 1:20 60 c.c.

CLEARING SOLUTION.

Chrome alum 180 grains
Potassium metabisulphite 2 ounces
Water 20 ounces

Instead of the metabisulphite 4 ounces of sodium sulphite may be used, with the addition from time to time of sufficient hydrochloric or citric acid to make the solution smell distinctly of sulphurous acid.

According to a writer in *The Cape Times*, by immersing a dry plate in the developer, before exposure, a greater sensibility is obtained. He immerses the plate for five minutes in an ordinary hydroquinone developing solution, and then places it, without ever rinsing, in the plate holder. An exposure of a quarter of a second gave him a negative full of detail, which, he asserts, he was otherwise unable to obtain.

A PHOTOGRAPHER of Atlantic City, N. J., Mr. Shaw, produces a photograph at a single exposure which gives five different images of the same person in different positions. This is accomplished by placing the sitter between two mirrors placed at an angle of 45 degrees to each other. The double reflection between these mirrors produces four images of the person placed in front of them, the principle being the same as that of the ordinary kaleidoscope. The original face is made in profile, and the reflections give the full face, opposite profile, and two rear views.

The color of pollen is due, according to the researches of Bertrand and Poirault (*Comp. Rend.*) to carotin. The pollen of Gramineae and Urticaceae and of some other orders are exceptions.