still another 6 grains and rock for another thirty seconds. We now look at our clock and find we have been developing just four minutes. We, therefore, conclude that we can get no more out of the plate; it is under-exposed. *Pour off* the developer, wash the plate thoroughly under the tap for about five minutes, and place it in the fixing bath, preferably the acid fixing bath, the *formulæ for which* has been given in the previous notes, and wait ten minutes, employing the time in washing the dish, measure, etc.

We now remove the plate from the fixing bath, wash it for about two minutes under the tap, see that we have not left our dark side open, and walk into day light and examine the negative. There appears a dense sky, scattered traces of objects here and there, but the greater part is bare glass; conclusion, grossly under-exposed. Treating the second plate in like manner, we find that the image appears much quicker, and after about three minutes' development it looks fairly well; we can distinguish most of the objects, and this with only the normal developer. Not knowing any better, we place it in the fixing bath after washing, and again take out to examine. We now find a *betterlooking negative*, nearly everything is visible, and only here and there patches of bare glass; still, in those parts in shadow the deposit is not very great: *conclusion, plate under-exposed*, but not so much as No. 1. So we start again with No. 3: with this the sky appears in thirty seconds, and the next highest light, it may be a bright house wall, a patch of grass, or something of that kind, appears in forty-five seconds. Noting this time we continue development for three minutes, and then wash, fix, and examine and see a pretty-looking negative dense in the high lights and showing detail strong everywhere, and practically no bare glass: conclusion to be drawn, correct exposure, correct development, result, a perfect negative.

If this be the result with two seconds' exposure, the last plate which received four seconds must be over-exposed: still we use the normal developer. The image flashes out in about fifteen seconds, shows rapidly everywhere, and then a dirty veil begins all over the plate. Alarmed at this, we wash and place in the hypo., and then examine, and find a thin sky, thin or not much deposit anywhere, no bare glass and a deposit, veil or fog over the whole plate; conclusion to be drawn, plate much over-exposed. From these four little experiments a good deal may be learnt. We should have learnt the normal appearance of a correctly-timed negative, what an under-exposed one looks like, and the appearance of over-exposure, and if we bear these results in mind and judge subsequent work by them we shall not have wasted our four plates.

The correct duration of development is an all-important factor: therefore we must treat of it at greater length. Upon the correct duration of development depends the correct printing density, for with a negative under-developed we obtain in printing a false and unsatisfactory result, one without shadows and white or brilliant high lights: whereas with over-development we may not only lose an enormous amount of time in consequence of the increased insolation we have to give for printing, but also the results as regards graduation are frequently wrong.

The best guide as to the duration of development is that suggested by Mr. Alfred Watkins, of Hereford. It is not flawless, theoretically, but it is the best practically. Mr. Watkins has formulated a table and method of working which is briefly as follows:—The time of the appearance of a high light, such as the grass in a landscape or the face in a portrait, should be noted, and the multiplication of this time, that is, the time which elapses from the pouring on of the developer till the first sign of this particular high light is seen, is then multiplied by the factor belonging to the particular developer used, and the result will be the complete time of development counting from the moment of pouring on the developer.

WATKINS' TABLE.

	Multiplying Factor.
Pyro. soda, 1 gr. pyro. to 1 oz.	7½
" 2 " " "	4
" 3 " " "	3½
" 4 " " "	3
" 8 " " "	2½
Pyro. potash, quarter less than above	
Hydroquinone (caustic soda, ½ gr. bromide)	3
Eikonogen (with carbonate of potash)	5
Metol (carbonate of soda)	16
Glycin	8
Amidol, 2 gr. to the oz.	10
" 4 " " "	6

When a negative flashes up the instant the normal developer is applied, over-exposure must be expected, and then some solution of citrate of soda should be added instantly, and development proceeded with. In developing plates which have been exposed at the same time as the first one, over-exposure may also be expected, and then the normal developer may be altered as follows: Pyro., 5 grs.: bromide, 2½ grs.; carbonate of soda, 5 grs.; water, 1 oz.: and more soda added as found necessary. In the case of under exposure it is advisable to add three times the quantity of water, and give it time, but no variation of the strength of the developer will compensate for under exposure. *Pharmaceutical Journal (Eng.)*

Thought Photography.

The *Amateur Photographer* for November 22nd publishes an interesting article by W. Ingles Rogers, in which he propounds the question, "Can thought be photographed?" and describes some experiments the results of which seem to have some bearing on the point. The article is illustrated, and there is one striking reproduction of a photographic plate which was placed before the experimenter's eyes for twenty minutes in a dark-room, after he had been steadily gazing at a postage stamp for one minute in the light. The experiment was performed in the presence of credible witnesses, and the plate, when developed, revealed two faint images of the postage stamp, and the print clearly shows these, surrounded by whitish fog. Curiously enough, the distance between the central points of Mr. Rogers' eyes is 2½ inches, but that between the two images is 3⅛ inches. It would appear, therefore, that this is a case of projection, and not merely reflection. The phenomenon is doubtless optical, but an interesting field of inquiry is opened up, and some time may elapse before it becomes capable of explanation.—*Phar. Journal.*

Test for Chlorates.

In the *Journal de Pharmacie et Chimie*, G. Denigès publishes a formula (resorcin, 1 gramme; water, 100 c.c.; sulphuric acid, 10 drops), for the detection of chlorates when present in a solution varying in strength from 1 in 1,000 to 1 in 50. The manipulation is as follows: 1 or 2 drops of the liquid containing a chlorate and 2 c.c. of pure sulphuric acid are poured in a test tube, the mixture is cooled by plunging the tube in cold water and then shaken; to this add, without agitation, 5 drops of the above resorcin reagent, then cool again with cold water, and gently shake. If chlorates are present, a green coloration is obtained. The same operation will produce with nitrates a faint yellowish tinge, changing to violet-red on heating. Nitrates, however, give an intense violet-blue tint, and in the presence of this acidulous radical it would be necessary in searching for chlorates to modify the process thus: To 2 or 3 c.c. *of the saline solution, add half its volume* of ammonia solution, filter if necessary, supersaturate with acetic acid, evaporate till only 4 or 5 drops remain, then add to *this residue 10 or 15 drops of water, and*, on testing for chlorates with the resorcin solution, the green coloration will be produced. A tenth per cent. of chlorate can be thus detected in a liquid containing 1 per cent. each of nitrate of sodium and nitrate of potash. If chromates or permanganates are present, the solution should be first treated with ammonium sulphydrate, filtered, supersaturated with acetic acid, boiled and refiltered. Iodides should be previously eliminated by lead acetate. The author states that the above test has a decided advantage over the sulphate of aniline reaction, as it does not affect bromates; it is, besides, a very delicate one, so much so that it is preferable to dilute the solution for analysis in order to obtain the characteristic green coloration. *-Phar. Journal.*

For seasickness there is no remedy so highly recommended as chloroform.