

summons to attend the afore-mentioned farm, that it was 'a short distance only' from the station; so you can imagine our surprise at having to travel for six hours over about the worst road I have ever travelled—and I have covered a few in this tropical clime.

"When we arrived at our destination, we opened our traps, the appearance of which suggested to the company we were pedlars with watches and jewellery to dispose of; but if they conceived such an idea, they were greatly mistaken, as our package consisted only of a Colonial home-made camera and changing-box combined, covered up with coffin cloth to prevent the light getting in the small holes; over the larger ones we had pasted brown paper. I have been told in confidence that cameras of English manufacture always go to pieces in this climate, and yet I see by the advertisements they continue to import such articles from 'our native land.' After some time we managed to get all the strings loose, and, with the aid of a few tin-tacks, we were ready for work. It was some time before we could get any of the company together, but we were anxious to know how things were working, so I got a group of about thirty persons together, while the camera-maker prepared to make an exposure. Well, we thought it best to develop before going ahead, so I skirmished round to find some place where I could develop the plate, and fixed upon a loft fairly light-tight, and, on developing, I found half the plate had been covered during exposure by something—I presume it must have been packing paper. It was too late for anything more that day.

"Next day we got to work, took a number of negatives, groups, views, &c., and in the evening started for my loft, and commenced to develop. I finished about a dozen, and left them to soak out in the open, a plan that is quite safe here during the night in summer. Although you are standing at 116° F. in the shade during the day, the nights are sometimes quite cold. Well, in the morning, I was rather disgusted to find about two-thirds of what I had developed were hopelessly bad; some fogged, but most of them out of focus, and I am sure one need not be surprised if they saw the focussing arrangements. This concern I have called a camera all through consisted of the following. A long box, very badly put together, with a frame to hold plate and focussing glass working inside. I can't say how the rack was put in which worked this frame, but it was an awful struggle to move it anyway, and when you had focussed, and wished to remove the glass for the dark slide, it was all about as firm as a match box. I tried one or two plates in that camera the second day, but after I saw the result I declined to have any more to do with it, and left all the camera arrangements to the builder (who never knew it to fail before). As the time of our stay was not limited, I was quite at ease to do a little shooting during the morning, while the instrument was under repairs. What between the inconveniences of the aforementioned apparatus, and the exuberance displayed by our sitters, you can guess we were under no few difficulties. We could not find a suitable light in any part of the house to operate, so were obliged to take possession of the carpenter's shop, and it was situated next a sheep kraal, the offensive odour of which was not exhilarating. However, with the aid of a disinfectant, and a couple of blankets for a background, we managed to make a few more failures. Our stock of optical instruments consisted of one lens, and we tried that all round—first the back lens, then the front, then both together. I regret I cannot explain to you the peculiar properties of that lens; but I verily believe it was one of the first of its kind. I hope the manufacturer never made another. He evidently did not think it worth his while to append his name. Well, you may reckon, going on in this way, we soon reduced our stock of plates, without the corresponding increase of good negatives.

"After ten days of bungling, we were obliged to send

back for more plates, which delayed us four days, and when they arrived, we had put the camera in order, and we made a great improvement on our previous endeavours, besides which we managed to redeem our falling reputation. After a few more days' sojourn, we took our departure for home. About half-way between our last scene of action and the railway station, we were invited to take some more negatives; but that camera must have got back to its old ways again, from the shaking up it received on the return journey; and to mend matters, the maker, who, in his leisure, devotes a little of his time to the study of botany, would insist on photographing many of the trees he saw on the road, and somehow the boxes got a trifle mixed, and on arriving home, we found sitters and trees hopelessly complicated on the same plates. The execution was good, but the composition was a failure. Since this expedition he has decided to try another make in cameras, and I hope our next trip will be a decided improvement on our last, the result of which I shall send you."

### COMPARATIVE EMULSION EXPERIMENTS.

BY J. VINCENT ELSDEN, B.SC. (LOND.), F.C.S.

ONE of the greatest difficulties to be encountered in conducting photographic experiments is the impossibility of insuring exact similarity of conditions in all the cases under consideration. So many minute details have to be attended to, and so small a variation will produce an appreciable difference in the result, that it is often impossible to say with certainty to what conclusion the experiment points. This is especially the case in emulsion experiments. The many different opinions as to the advantages or disadvantages of certain formulæ, or of different methods of development, have arisen, not, as some suppose, from capriciousness of physical or chemical laws, but from some unthought-of or unavoidable difference in treatment, which, small though it may be, is yet sufficient to exert considerable influence upon the delicate operations of photographic manipulation.

I have endeavoured in the following investigations to avoid these sources of error, as far as possible, by making the experiments strictly comparative, that is to say, by always having a fixed standard of comparison, which is subjected to precisely the same conditions as the experimental plate.

This I tried to do by coating each plate in three divisions, with different kinds of emulsions; the first division always being covered with the pure bromide, free from any admixture of iodide or chloride.

I first made three separate batches of emulsion. The first, consisting of bromide only, was prepared as follows:—

Silver nitrate	...	...	...	200 grains
Potassium bromide	...	...	...	150 "
Opaque gelatine	...	...	...	30 "
Hydrochloric acid	...	...	...	1 minim
Water	...	...	...	5 ounces

Added after emulsification—

Opaque gelatine	...	...	...	100 grains
Nelson's No. 1.	...	...	...	140 "
Water	...	...	...	5 ounces

The second, consisting of iodide only, I prepared by the formula—

Silver nitrate	...	...	...	100 grains
Potassium iodide	...	...	...	100 "
Opaque gelatine	...	...	...	15 "
Hydrochloric acid	...	...	...	1 minim
Water	...	...	...	3 ounces

Added after emulsification—

Opaque gelatine	...	...	...	50 grains
Nelson's No. 1.	...	...	...	70 "
Water	...	...	...	2 ounces