

## LETTERS TO THE EDITOR.

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## Colour Photography.

I HAVE had a good many inquiries addressed to me about the Dansac-Chassagne process of colour photography, described in NATURE, February 4, 1897, and as I was to a large extent responsible for having drawn public attention in this country to the process, I am naturally anxious that those who feel an interest in the subject should have, at all events, such information about it as I can supply without a breach of the confidence with which I have been favoured.

First let me say that the information I can publish does not include any details as to the materials employed, or the method of their manufacture. The process is to be worked as a secret one, and the statements made to me as to the method of preparing the liquids used were confidential. This of course greatly affects the scientific interest of the question, but commercial considerations in this, as in many like cases, overpower scientific interest.

It is only quite lately that I have been able to make any fuller examination of the process, and such rough tests as I have made are very incomplete. They are, however, complete enough for me to say that, while they do not justify the claims originally put forward as to the completely automatic nature of the process, I yet cannot account for the results produced without admitting that the selective action claimed does to some extent exist; that the colouring matters applied to the photographic print have a certain tendency to attach themselves to those portions of the print which would be of a similar colour had the image been reproduced in natural colours, and also that the colouring matters, when applied in succession, do so combine or react on each other as to reproduce, approximately, the tones or tints of the original.

There are some other inaccuracies in the first description given to me, which I should like to correct. It does not appear to me that a special negative, or a special print, is any advantage. It certainly is not necessary. The process can be applied to any ordinary print on albumenised paper, or to any positive on an ordinary gelatine plate. It does not appear to work successfully with some, at all events, of the more modern printing-out papers. Nor is it a fact that during the process of treatment the positive has to be exposed to bright light.

This it will be said is different from the process as it was first described. Precisely. It is because of that difference, and because I was responsible for the publication of the first description, that I now ask you to allow me to inform your readers as to the real value of the process so far as I can estimate it at present.

The above conclusions are based on my own attempts, and some rather more successful) by my friend Mr. Herbert Jackson. Judging from the work of the skilled operators, whom I have watched in M. Chassagne's studio, I can only say that in their hands the process is certainly not entirely automatic. The operator requires to know generally what the colours should be, and the results largely depend on his judgment and skill in applying the colour in the right places.

But the practical outcome is that anybody, after a little instruction, can produce, with very great rapidity, coloured pictures which, as evidenced by the specimens shown in public, are of considerable merit. The result is obtained by first applying the liquids over the whole picture, and then working up the different parts of the picture by applying them locally. About the truth of this there can be no manner of doubt. Hundreds of persons in Paris have seen it done, and have admired the results. The difficulty is to satisfy oneself as to how far the process is purely mechanical, and how far it is a matter of skill. A certain amount of skill is required, but, admitting this, it appears to me that taking it at its lowest value, the process does provide a means of colouring photographs—and with approximate correctness—that has not previously been available.

Whatever may be the practical or commercial value of the process, it will prove of very great theoretical interest, if as an outcome it should be conclusively proved that any monochrome photograph has even the smallest power of colour selection, depending on the tints of the original; as this once established, some of our current photographic notions would be revolutionised.

HENRY TRUMAN WOOD.

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## Telegraphy without Wires, and Thunder-storms.

I HAVE recently made experiments on telegraphy without wires, and during the last few days, which have been very hot, I have experienced certain phenomena which somewhat interfere with the reception of signals. The receiver used by me is constructed thus: a piece of goose-quill one inch long is stopped at each end with cork, two ordinary pins pierce each cork, their points being about  $\frac{1}{8}$ -inch apart; the intermediate space is filled with finely-powdered nickel; (experiments on the relative sensitiveness of receivers made with quill and glass show that those made with quill are more sensitive than those made with glass.) The receiver is attached to an acoustic resonator carrying an electrically driven tuning-fork (500 double vibrations per second). The receiver is placed in contact with the foot of the fork, where it is attached to the resonator. The receiver forms part of a circuit including a dead-beat galvanometer, a single dry cell, and a resistance of 1500 ohms. One terminal of the receiver is earthed, and the other is attached to a thick copper wire, 30 feet long, fixed to a post. The vibrating fork effectually maintains the high resistance of the receiver, except when it is affected by a spark at a distance. The galvanometer is then instantly deflected, but at once returns to a nearly zero position. While I was watching the spot of light of the galvanometer, I noticed that it was deflected when the transmitter was not in action; after some time distant thunder was heard; in some cases the time between seeing a deflection and hearing thunder was 25 seconds, a time corresponding to about 5 miles; by degrees the storm, though at some distance, caused the spot of light to be deflected up to 25 times per minute.

From what I noticed it is evident that signalling would be somewhat seriously interfered with by a thunder-storm even at a considerable distance.

I have used the tuning-fork method of shaking the receiver since last February, and have never seen it fail in its action. Another method which gives good results is to mount the receiver on a small projection cemented to the disc of a telephone, in the circuit of which an electrically driven tuning-fork and a battery are included.

June 26.

FREDERICK J. JERVIS-SMITH.

## Distant Cannonade.

IN answer to your note upon the distances at which Saturday's salute was heard (NATURE, July 1, p. 204), I have to say that I heard what I suppose was the salute here in Chelsea. I took it at first for distant thunder, and went to look at the sky and barometers.

The newspaper reports showed, since that, that the thunder-storm was much later; and I did not hear sounds of it at all. The sound reminded me rather of a *feu de joie* than of a salute, which is accounted for by the fact that the squadrons saluted in succession.

There is nothing unusual in the hearing of artillery at such a distance, about sixty statute miles. The Bombay time guns and salutes are often heard at the northern Mahim, a known distance of over fifty statute miles. They are, or were in my day, very modest affairs—old-fashioned twenty-four or thirty-two-pounder guns, loaded with four or five pounds of coarse black powder, not all of which was burnt. I was working at warning guns in that country myself for some years, and had to attend to such matters, but have no notes here from which I can give exact figures.

The target practice of the forts and turret-ships at Bombay was very easily distinguishable from mere salutes and time guns; not merely as a louder sound, but by being *felt* in the chest when those could only be heard. Probably some of your naval readers can tell us something of the guns and charges used at Spithead on June 26. It may be presumed that they were of more power than the old-fashioned artillery that I have mentioned; but still it is probable that they were the smallest guns of the fleet, and the saluting charges much less than those for service. The sound produced by modern powders, too, is probably very different in quality from that of the old black powder with which the late Prof. Tyndall made his experiments.

The subject is of very considerable importance, and any information that our "up-to-date" gunners can give us will be welcomed by all connected with the sea.

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