

SINGLE-PLATE COLOUR-PHOTOGRAPHY.

THE desire has often been expressed to have a sensitive plate that might be exposed in any ordinary camera, and that would yield what has so often been called a photograph "in natural colours." Such plates are now on the market in France, and will doubtless be obtainable in this country as soon as the makers are able to meet the demand for them. It has taken the enterprising firm of Messrs. Lumière more than three years to perfect their invention and reduce the manufacture of the plates into a system suitable for the factory.

Colours are reproduced by these plates only in that limited sense which applies to all three-colour processes. The natural colours are imitated by tints, which, if successfully produced and seen by a suitable light, are not distinguishable by the unassisted eye from the original. The accuracy of the imitation depends on the choice of the dyes used, and also on the colour-sensitiveness of the emulsion taken in conjunction with the compensating screen used to reduce its excessive sensitiveness to the more refrangible light that characterises all photographic plates.

In the ordinary methods of three-colour photography the three colours are separately photographed, using coloured media that transmit only the light required, a print from each negative is obtained in its proper colour, and the three prints are superposed. For one plate to contain in itself the necessities for such a process it is obvious that its surface must be divided among the three colours, and that the separate patches of each must be so small that, as ordinarily viewed, they are not distinguishable, must be comparable, in fact, to the lines in a wood cut or the dots or grain in a photomechanical print. Further, if the print is to be complete in itself, the three colours must be an integral part of it, and not, as in Prof. Joly's method, form a separate "viewing screen."

The new plates fulfil these conditions. The coloured grained screen that has the three colours in invisibly small patches, forming a tricolour mosaic with the three colours so proportioned that the general impression they give is a neutral grey, is obtained by means of starch granules. These are selected of fairly uniform size, and dyed in separate quantities red, green, and violet. The three lots are mixed as thoroughly as possible, and in such proportions that no colour predominates, and spread upon glass as a film one layer thick. The interstices between the rounded granules are filled up by pressing and more or less crushing the grains, an improvement on the original method of filling them up with a black pigment. This three-coloured irregular mosaic is varnished, and a specially sensitised emulsion is spread on the top of it. The plate is then ready for the camera.

The exposure is made with a suitable colour screen at the lens so that the red, green, and violet lights may act upon the plate in their proper proportions in spite of the want of orthochromatism of the emulsion. The glass side of the plate is presented towards the lens, so that the light that forms the image passes first through the layer of dyed starch granules. The sensitive layer will obviously be affected behind each coloured granule so far as the light from the object is of the same colour as the granule. After development the image has to be reversed, or changed from the negative first produced into a positive. Therefore, instead of fixing in the ordinary way, the metallic silver image is dissolved out by an acid oxidising solution, and the remaining silver bromide is reduced to the metallic state by a developer. Intensification may be necessary. The result is a three-coloured grained

transparency in which the truth of the colours depends upon the conditions stated above.

It is obvious that such plates must be comparatively costly, but then only one is required, while some methods of colour photography need six, or even more. The reversal of the image is more trouble than simple fixing, but only one plate has to be dealt with instead of many. The image is granulated, while other methods give results free from grain. It is therefore impossible to say much as to the practical advantage of the method until the plates can be put to actual use. There can, however, be very little doubt that this method, or a modification of it, has a future of usefulness, and no doubt at all as to the ingenuity of the idea that has given rise to it, and the admirable perseverance that has overcome innumerable difficulties in practically working it out.

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CENTENARY OF THE GEOLOGICAL SOCIETY.

IN September next the Geological Society will celebrate its hundredth birthday. In honour of this interesting occasion preparations have for some time been in progress. Invitations to the celebration have been issued to all the foreign members and foreign correspondents of the society; the various geological surveys all over the globe, universities having chairs of geology or mineralogy, scientific academies, societies and museums at home and abroad have been invited to send delegates to London. The large number of acceptances already received include the names of many of the most distinguished geologists of the present day, both in the old and the new world.

It has been arranged that a series of excursions to various parts of this country shall take place before the centennial meeting, under the conduct of fellows of the society conversant with the geology of the several selected districts. These excursions will begin on Wednesday, September 18, and the excursionists will all be back in London by the evening of September 25. The celebration of the centenary, which will extend over three days, will begin on Thursday, September 26, at 11 o'clock, in the Hall of the Institution of Civil Engineers, when the chair will be taken by Sir Archibald Geikie, who has been elected president of the society for the second time in order that he may preside on this occasion. The foreign members and foreign correspondents, and the delegates from institutions at home and abroad, will then be received by him, and will present their addresses. In the afternoon, at 3 o'clock, in the same hall, the president will deliver an address, while in the evening a banquet will be given by the society to its colonial and foreign guests.

Friday, September 27, will be chiefly devoted to visits to museums, galleries, &c., concluding with an evening reception. On Saturday, September 28, short excursions have been projected to places of geological interest within easy reach of London. On Monday, September 30, the visitors will be divided into two sections, one of which will go to Oxford, the other to Cambridge. It is understood that the universities will confer honorary degrees on some of the more distinguished geologists from beyond the seas, and that college hospitality will be as abundant and hearty as usual, while those visitors who may still have energy enough left for field-work will be taken on geological excursions from both the university towns. This well-planned combination of scientific intercourse with social pleasure can hardly fail to have a lasting effect in forming and confirming friendships by bringing the geologists of many different countries into close personal relations with each other.