

### A SUGGESTION FOR A POSSIBLE METHOD OF IDENTIFYING THE COLOURS PHOTOGRAPHED.\*

BY JULIUS F. SACHSE.

THE production of orthochromatic or colour-stained plates, which will yield negatives or prints giving approximately true colour values, is at present one of the most active problems of the photographic world, attracting the attention of specialists and active researchers in almost every country. These colour-sensitive plates, by reason of improvements made in the dyes used, thus ensuring their stability or keeping qualities, in addition to increasing their sensitiveness to shades of colour, together with the reduction in the price of manufacture, have of late increased their popularity with the professional as well as the amateur photographer, so that where, but a short time ago, they were only used by experimentalists, and by a few professionals for copying art paintings and like subjects, they are now coming into general use in all branches of photography, from studio portraiture down to the snapshot of the hand camerist.

Ever since the orthochromatic principle was first broached, the hope was fostered that by some means, in addition to giving true colour values, it would become possible to find a method to distinguish or identify by the print the colours in the original. This problem has for a long time remained a matter of conjecture and research, engaging the attention of the best known photographic students and theorists at home and abroad, as is instanced by the experiments with the solar spectrum and shades of colour—thus far, however, without leading to any practical method—by which the colours in the original might be identified at sight.

In connection with this subject, I wish to bring to your notice a suggestion for a simple method by which this much-desired object may be obtained, at least under certain conditions in suitable subjects, as you will see by the results shown by the negatives and prints as well as on the screen. The experiment may be considered a partial solution of the problem, at least within the scope of the subjects and colours upon which I was able to experiment. The subjects were entomological and ornithological (butterflies and birds), and were selected with reference to the brilliancy of the colours, and the difficulties which they have heretofore presented to the photographer. The suggestion, as you will perceive, is simply to photograph a colour key along with the subject, which shall explain itself. Of course, I do not for a moment wish to claim that this method will work in every case and subject, or where there is a marked admixture of white or black with the respective colours; but under stated conditions, for such subjects as indicated, as well as other departments of natural history, where the colours of the insect, animal, or flower are bright and decided, I do claim that with suitable orthochromatised plates, and where the requisite care is taken to prepare the colour key, and to ensure correct exposure and development, the suggestion, simple as it is, will be found to work satisfactorily, and that the colours of the original can be distinguished or recognised in the print in every case by the student who is able to judge, regardless of how much it might puzzle the general observer who is not at all familiar with the subjects.

I will now call your attention to the negatives and prints, and will state that they were made on the ordinary

commercial plate, with a portable outfit, in the Academy of Natural Sciences of Philadelphia, with a poor side light, under very adverse conditions. The first picture was a print of eight butterflies, selected on account of their varied colours, which comprised lemon-yellow, brilliant blue, blood-red, orange, bright red, and black. Care was taken that the specimens, with the colour key, should all be upon the same plane, and to ensure an equal illumination. The colour key was formed of a plain white card, upon which was fastened pieces of tissue paper, matching in colour the hues of the moths; two of the shades, the bright blue and the red orange, I unfortunately was not able to match exactly from the resources at my disposal as well as they might have been. However, crude as this experiment is, the result will prove the correctness of the principle as suggested. With the use of a colour screen or light-filterer much better results can be obtained, which I trust to show you at a future meeting. Still, you will perceive that the four colours can be easily identified in the subjects. The plates used were the regular Carbutt orthochromatic, Sens. 23. The development was with the combined developer as per formula in *American Journal of Photography* (February, 1891, p. 91). I will also state that plates of the same emulsion, but not orthochromatised, did not prove successful, as you will see by comparing the prints numbered I., VII., and VIII., respectively. The attempt to attain the results by pyro and soda developer also resulted unsatisfactorily, all things being equal.

In the next subject, the *Sittace macao*, or red and yellow maccaw—a very unpromising subject—you will see on the print from an orthochromatic plate the five colours, cream, blue, yellow, red, and green are all plainly marked or discernible, while on the print from a plain plate there is but little distinction between the two first colours or the three latter ones.

One matter I overlooked in this experiment, viz., in making a colour key always to include black where it appears in the subject, as where bright, deep red and black appear close together, as in this subject, it would be hard to tell which was the red from the black, especially if strongly printed.

The question may be asked, Of what practical value or extended use is this colour key? In reply I will state, first, from a scientific point of view, that any process of reproduction by which the natural colours can be deciphered, or even approximated, must prove of the greatest value. This is especially true in the department of entomology and ornithology. Further, the absolute truthfulness of the photographic processes is far in advance of the laborious and expensive hand productions which are now used in the study of scientific matters. In addition, our present illustrations too often carry with them the individuality or imagination of the artist, to the detriment of nature, notwithstanding the great care taken by scientists to obtain the pictures true to nature. Then we have the great search power of the camera, with, perhaps, its greatest possibilities yet undeveloped, showing the structure of insect life, with a fidelity to nature in its most minute parts unequalled by any other process, which is now supplemented by the simple process brought to your notice this evening, foreshadowing the possibility of distinguishing the various shades of colour in the original.

From the commercial point of view, the above application cannot be over-estimated, as you will see that, by the aid of the colour key and orthochromatised plate, a nega-

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