

used to denote special features. The list of terms is very complete, and includes a few, e.g. "marcescent," "fovilla," and "sobole," that would not have been missed. A few of the definitions, notably those of the seed and leaf, might be more accurately expressed, and among misprints one of the most noticeable is "aetoeis" for "etaerio"; but on the whole the author has done her work well, and the book should prove useful.

THE PHOTOGRAPHY OF COLOUR.

Natural-colour Photography. By Dr. E. König. Translated from the German, with additions, by E. J. Wall. Pp. 94. (London: Dawbarn and Ward, Ltd., n.d.)

Colour-correct Photography. By T. Thorne Baker. Pp. 95. (London: Dawbarn and Ward, Ltd., 1906.) Price 1s. net.

THE first of these volumes deals with the reproduction of colour and the second with the representation of coloured objects in black and white or monochrome.

Towards the end of the first volume we read that "colour photography is not a purely mechanical copying of nature, carried out with mathematical precision, and that, indeed, it will never be. He who works quite automatically will never advance." The statement as to the present is certainly true, and the prophecy, though bold, is, literally, justifiable so far as experience goes. The reproduction of colour is thus essentially different from the representation of form, for this latter depends only on the perfection of one's instruments and a commonly intelligent use of them. Colour photography, as at present practicable, may be described as a kind of simplified chromolithography, inasmuch as the choice of colours rests with the worker or those who provide him with materials, and the depth of tint depends on the worker's judgment. Its distribution is mechanical, but, again, this depends on the colour-screens or filters used in the photography, which are never more than approximately what they are desired to be. And when it is remarked that the colours used are none of them permanent in the sense in which carbon or platinum is permanent, it is obvious that, so far as the colour goes, colour photography does not furnish more trustworthy records than painting or any other colour-production method, except, perhaps, that the possible errors of the unskillful may be a little more limited.

At the same time, there are certain principles which, if they could be perfectly applied, would give perfect colour reproduction. Remarkably fine work has been done by those who have adhered as closely as possible to these principles, as well as by those who have trusted chiefly to empirical methods. The volume before us is a small one; it merely mentions the underlying principles, being devoted almost entirely to the practical details of the "subtractive method" of three-colour photography, that is, where the three coloured prints are superposed so that their

absorptions are added, and to the "additive method," in which the three colours themselves are added to each other, as when they are separately projected by optical means on to the same screen, or united in the eye itself by means of mirrors. That the two methods are not so radically different as they might at first appear to be is obvious from the fact that, to a certain extent, the colour-screens used are interchangeable. We think that a little more of the theoretical basis would have made the practical details more understandable. Spectrum diagrams of the effects of the various colour-filters might have been given, and, in dealing with three-colour work, some confusion might have been avoided by omitting the reference to yellow as a fundamental colour, thus giving four colours instead of three to deal with. We are astonished to read at p. 47 that "it is a recognised fact that photography always reproduces shadows much too dark." It would have been better to blame the photographer for this rather common error than apparently to justify him by suggesting that he is helpless.

As to the scope of the volume, photo-mechanical methods are altogether and designedly excluded, as the book professes to appeal to amateurs and others who are photographers, but not to commercial printers. The direct processes such as Lippmann's, and those in which the colour work is practically done by the maker of the materials, are only shortly referred to in the introduction. As a practical guide to the working of those methods that are now generally available for amateurs the volume will be found very useful, as it gives formulæ for the various colour-filters and dyes for staining, quite practical instructions for making the filters and other apparatus, and deals systematically with the subject.

Mr. Thorne Baker's volume is more than the title indicates, for he gives a chapter on the representation of colours incorrectly, as may be sometimes desirable for distinguishing emphatically between two or more colours. To get a coloured flashlight that will shorten the exposure by increasing the brilliancy of the colours to which the plate is less sensitive, he recommends to mix magnesium powder with a twentieth to a fortieth part of a mixture of equal weights of calcium and lithium carbonates. The author gives much other useful information in the ten chapters that deal with the various branches of the subject. We do not see, however, why the exposure should be shortened when the studio blinds are coloured instead of using a coloured screen as usual, nor why metal should be "not recommended" as a developer. Such advice would be more acceptable if the reasons for it were given. The explanation given at p. 85 of the fact that "the exposure required with cells of different thickness does not vary directly as their width" is incorrect; it is not a matter of absorption by the glass sides of the cell, but of the selective absorption by the coloured liquid. But the book as a whole forms a useful introduction to the subject, and contains some formulæ and suggestions rarely met with.

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