

Photographic Copyright. By G. E. Brown and A. Mackie. Pp. 89. (London: Henry Greenwood and Co., 1912.) Price 1s. net.

ACTS of Parliament are not always intelligible to even the legal mind, and the ordinary person, whose privileges and duties are therein defined, is often much troubled to know what the law really is. Therefore, everyone who makes or has to do with photographs is much indebted to the authors for clearly stating how the matter of copyright stands. They first give on a small page the shortest possible statement of the new Copyright Act, pointing out those parts wherein the new Act differs from the one that preceded it. They then take up just those points upon which anyone reading the Act would like a little more information, and make them clear, often quoting judicial decisions where the interpretation of the Act would otherwise be doubtful. The volume closes with a tabular statement of the copyright laws of other countries, the text of the 1911 Act, the 1862 Act so far as it is not repealed, an excellent index, and a list of the most important copyright cases that have been decided in the Courts.

LETTERS TO THE EDITOR.

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Artificial Daylight.

MAY I supplement the interesting article on the above subject which appeared in NATURE of August 15 by a short note on some work carried out about twelve years ago by Mr. Arthur Dufton and myself? The work had for its primary object the removal of the great difficulty experienced by dyers and other workers in colour, under the extremely variable conditions of illumination which naturally prevail. These conditions are such that during the winter months a few hours only per day are available for the accurate matching of colours, and even in the most favourable circumstances the colour-quality of daylight is continually varying. A standard light, which would render dyers and others independent of atmospheric conditions, was therefore much needed, and the "Dalite" lamp which was the ultimate outcome of our work, solved the problem in such a satisfactory way that many hundreds are in use in dye-houses, colour-printing works, schools of art, drapery establishments, &c., both in this country and abroad.

For accurate colour work it is, of course, not necessarily sufficient to have available a "white" light. In addition to being devoid of colour, the light must obviously contain all the vibrations of the visible spectrum in properly balanced proportions. The correction of a single radiant which does not yield a complete and continuous spectrum is impossible.

Our work, therefore, consisted in the examination of all available illuminants, the selection of the most suitable, and the elimination from the selected light of those rays which were found to be present in excess.

Some account of the work has been given in papers read before the British Association (Bradford meeting, 1900), the Society of Chemical Industry, and the Society of Dyers and Colourists.

We found that an arc lamp of the enclosed type, burning pure carbons, gave the nearest approximation to the light favoured by colourists, *i.e.* that diffused from a cloudy north sky. An enclosed arc lamp yields light from two sources—the glowing carbons and the arc itself—and by adjusting the length of arc, diameter of carbons, &c., and thoroughly mixing by diffusion the light from these, we arrived at our "raw" light.

This was found to contain an excess of red and violet rays, and a long investigation was then undertaken to find the best means of cutting out this excess. Reflection of the light from white or tinted surfaces was a practical failure on account of the enormous loss in intensity, and eventually direct absorption by suitably tinted screens was adopted. The whole range of coal-tar green and blue colouring matters were examined in the form of dyed gelatine films, and the curious fact emerged that with one exception—naphthol green—all were fairly transparent to red light, and therefore unsuitable for the purpose of absorbing the red, though the absorption of the excess of violet presented no difficulties.

With a suitably adjusted lamp, a solution of sulphate of copper was found to give the necessary absorption in the red, and after numberless expensive failures, a suitable blue copper glass was produced.

In its final form the "Dalite" lamp consists of a carefully adjusted enclosed arc lamp surmounted by a lantern fitted with white diffusion and blue absorption glasses. Provision is not usually made for the absorption of the excess of violet since this is not found to interfere with the accurate matching of hues,¹ but by the introduction of a third glass this is readily provided for.

The Moore light referred to by your contributor, in which the gas in a partially evacuated CO₂ tube is rendered incandescent by an alternating current, emits light containing an excess of green rays, which renders it inaccurate for many hues, *e.g.* pale pinks and blues, but otherwise it is a most suitable illuminant for colour work. WALTER M. GARDNER.

Technical College, Bradford, August 16.

Experimental Illustration of the Reversal of Bright Line Spectra.

THE following way of showing the reversal of the bright line spectrum of metals may be of some interest to lecturers. I have not, so far, seen the method described.

Having scraped a hollow in the lower carbon of an arc lantern (which should be non-automatic), fuse a little iron wire (for example) in the flame, keeping the carbons as far apart as possible. If the usual spectroscopic arrangement is placed in front of the lantern a bright line spectrum of course appears on the screen or in the field of the telescope.

Now by the hand adjustment reduce the distance between the carbons until the point of the upper carbon is practically within the crater. Suddenly the bright lines on the screen "reverse," becoming bright once more as the poles are again separated.

The production of reversal is evidently due to an envelope of relatively cool gases round a *small* arc, the envelope consisting of the outside layers of the gases in the original and much larger arc.

¹ The reasons for this have been thoroughly worked out, but are immaterial to the present purpose.