THE SCIENTIFIC PHOTOGRAPHER

PLATE I

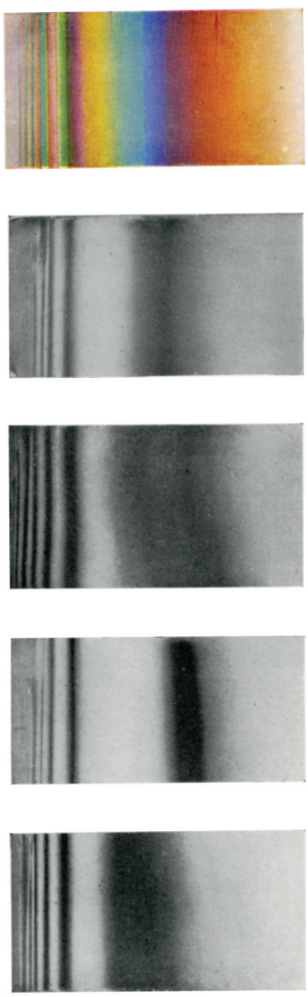

Fig. 11. Reproduction of colours of soap film.

THE SCIENTIFIC PHOTOGRAPHER

BY

A. S. C. LAWRENCE, Ph.D.

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ERRATA

p. 71, *line* 7, *for* meter *read* shutter
p. 74, *line* 3, *last word*, *for* violet *read* orange
p. 97, *lines* 2 *and* 3, *for* (*a*) *read* (*b*) *and for* (*b*) *read* (*a*)

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Catalogue of the Epstean Collection. University of Columbia Press, 1937. This is the finest collection of photographic works in existence. The catalogue is therefore the most complete bibliography of photographic bibliography.

Numerous trade pamphlets containing valuable information are supplied by the more important manufacturers of cameras and photographic materials. These are free or sold for a few pence.

The Ilford Manual of Photography is one of the best books of general instructions for elementary workers.

The British Journal Photographic Almanac, which appears annually, is a useful source of formulae. Its advertisement section is a valuable survey of the latest apparatus and materials on the market.

Photo-Technique. A technical photographic monthly published by the McGraw Hill Publishing Co.

PREFACE

During the last twenty years or so very great advances have been made in photography, both in the design of apparatus and in the performance of materials. It is doubtful, however, whether there has been a commensurate advance in the quality of work turned out. Spectacular results have been obtained, but these are new applications which would not have been possible earlier and they have no bearing upon the general level of photography. In scientific work, results of very great value have been obtained by using the photographic plate as a detector of new radiations, but the photographic technique involved is rudimentary. Full use of photography is certainly not made in scientific laboratories. Nor has any organized attempt been made to use cinematography either for research or for serious teaching.

The reasons for this failure are complex, but all boil down to one—ignorance. Ignorance of the possibilities and limitations of apparatus and materials. The subject is now too complex to be 'picked up' from a few demonstrations in the dark room. Previous experience as a 'button-pusher' may implant ideas which are more harmful than complete ignorance. Far too many laboratories possess no photographic equipment and no member of the staff with real technical knowledge. In these circumstances, photography is used only when there happens to be working there an amateur whose enthusiasm can be exploited when necessary. The parochial spirit of Departments is a barrier against any communal service by a skilled worker. Consequently, considerable sums are spent on work done by outside commercial firms.

It would be quite easy to produce a collection of striking scientific photographs, but such a work would be of little value, since the chosen examples would be striking because of the scientific value or the nature of the subjects rather than because of any special technique. In any case, no general information of photography as a tool is given in such a book and this is just what is wanted by the scientific worker. This book attempts to give a short account of the possibilities and limitations of photography—primarily for the scientific worker but also for the serious amateur

who has an elementary knowledge of chemistry and physics. For there is no special scientific photography for scientists. All the branches of the subject used by amateurs and professionals are used at some time in scientific work. The book has been kept short by omitting detailed instructions of the sort included with materials when bought and by giving basic information rather than detailed minor variations.

A serious limitation to the use of photography in publications is the high cost of printing. This is particularly serious in the case of scientific journals, but there is no reason why lantern slides should not be used more. The bogey of cost is supposed to explain the low level of illustration of most scientific books, but occasionally a book appears which suggests that this bogey is not so real. An excellent example is *Animals without backbones*, by Ralph Buchsbaum (371 pp.), published by the University of Chicago Press at 18*s*. 6*d*. (1938).

I am indebted to Mr G. W. W. Stevens and to Mr P. R. P. Claridge for reading the manuscript and for useful suggestions. From Messrs Kodak, Ilford, Zeiss Ikon and Agfa I have received much valuable information—more, in fact, than I have been able to use in detail. For illustrations, I am indebted to the following: Messrs Kodak (1*a*, 9, 47, 48, 56, Messrs Ilford (8 *b*, 57, 66), Messrs Ilford and *The Times* (79), Messrs Dufay-Chromex, Ltd. (45, 46), Messrs Zeiss Ikon (40, 72), Prof. Svedberg (1 *b*), Mr Webb, 2, Mr G. A. Jones, 15, Messrs Ensign, 33, Messrs Leica, 41, Dr H. Dunlop, 69, Major G. W. G. Allen, 70, Mr W. E. Woolfe and Science Films, Ltd., 71, Dr W. T. Astbury, 80, Prof. G. I. Finch, 81. The remaining illustrations are the author's.

A. S. C. L.

4 *September* 1940