

THURSDAY, MAY 29, 1919.

NATURAL ORGANIC COLOURING
MATTERS.

The Natural Organic Colouring Matters. By Prof. A. G. Perkin and Dr. A. E. Everest. (Monographs on Industrial Chemistry.) Pp. xxii+655. (London: Longmans, Green, and Co., 1918.) Price 28s. net.

THIS comprehensive treatise is the first English monograph to deal exhaustively with the fascinating but complex chemistry of the natural organic colouring matters. The historical aspect of the subject-matter and the scheme of classification are unfolded in the introduction, after which eighteen groups of natural dyes are described. The first chapter deals with the anthraquinone group, containing alizarin, the colour principle of madder root, which shares with indigo of the nitrogenous indole group the distinction of being one of the dyes of an antiquity so remote that it precedes the dawn of history. Although the importance of alizarin and its synthetic derivatives has overshadowed that of its other naturally occurring congeners, yet it should not be overlooked that the anthraquinone group contains also cochineal, a colour principle originally obtained from Mexico, and utilised in the ancient American civilisations long before it became known to Europeans. Lac and kermes, the Asiatic counterparts of cochineal, also contain colour principles belonging to the anthraquinone group. It is remarkable that naphthalene, which figures so largely in the production of synthetic dyes, is represented among natural colouring matters only by the small naphthoquinone group.

The majority of the natural yellow colouring matters are derived from xanthone or flavone, and much of our knowledge of these two groups is derived from the researches of Prof. A. G. Perkin, one of the authors, who has devoted himself for many years to the study of this intricate branch of organic chemistry. The flavone and flavanone groups have also received the attention of a band of Irish workers under the guidance and inspiration of Prof. Hugh Ryan.

The researches of Willstätter, carried out in the generously endowed Kaiser Wilhelm Institute at Dahlem, partly with the assistance of British and American collaborators, including Dr. Everest, the joint author of this treatise, have led to the elucidation of the chemical nature of many colouring matters of the γ -pyran group. The anthocyan pigments, present as glucosides in many flowers and coloured fruits, form a comparatively large class of natural colouring matters derived from pelargonidin, cyanidin, and delphinidin. These fundamental anthocyanidins are in all probability produced from the yellow flavonol sap pigments by a process of acid reduction. They are oxonium compounds, which are generally isolated in the form of their crystalline chlorides. These researches, which have demonstrated the chemical

nature of the varied hues of the cornflower, salvia, pansy, aster, chrysanthemum, peony, hollyhock, and many other flowers, and of the colours of the ripe cranberry, bilberry, and black grape, are of the utmost scientific importance in extending our knowledge of the products of plant life.

The dihydropyrane group includes hæmatein, the colour principle of logwood, the most important natural dyewood, which is still extensively employed by dyers.

The chapter on the colouring matters of unknown constitution shows that there is still ample scope for patient study and systematic research among the natural dyes. There is a special reason now why these laudable efforts should be supported to the fullest extent and with Governmental assistance. Many of the plants yielding unclassified dyes have a tropical or subtropical habitat, and the fortunes of war are bringing these localities more even than formerly under the control of the Allied nations, to the exclusion of the Teutonic States. It behoves the statesmen of the victorious Allies to encourage to the fullest extent the work of those trained observers who are prepared to devote themselves to the study of these interesting and possibly utilitarian problems. The treatise under review, which presents a complete epitome of the researches carried out on natural dyes, will prove to be not only an indispensable work of reference, but also a source of inspiration to any scientific worker wishing to extend the boundaries of our present knowledge of these colouring matters.

G. T. M.

EDUCATION AND INDUSTRY.

Can We Compete? Germany's Assets in Finance, Trade, Education, Consular Training, etc., and a Proposed British War-cost Reduction Programme. By G. E. Mappin. Pp. 159+chart. (London: Skeffington and Son, Ltd., n.d.) Price 4s. 6d. net.

MR. MAPPIN'S book consists virtually of a number of essays on a wide variety of subjects, which include technical universities, town planning, land registration, the training of women to become self-supporting, the reclamation of peat bogs, etc.

From his observations as a student in Germany, Mr. Mappin describes how the different problems are there dealt with, and, where a comparison is possible with our methods, suggests the lines on which our industry, commerce, and education should be reorganised. The book lacks co-ordination between its various sections, and is written in a sketchy and unconvincing way. In making out a case in favour of certain proposals on German lines, the author over-emphasises the prevailing state of affairs in this country. Further, he does not appear to be fully familiar with many of the conditions he seeks to reform, advancement in some respects having proceeded far beyond his proposals.

In common with many would-be reformers, Mr.