

ing on wood are concisely described; but the principal part of the work, and by far the most important, deals with the colour sensitising of emulsions, and the applications of such sensitised emulsions to the production of negatives in the many methods of dealing with and reproducing colour that are now in vogue.

The applications of the newer sensitisers are described in many scattered communications, and often with very little discrimination between the practically useful and the merely theoretically interesting. Mr. Klein states that he has included only those that have passed the test of time and been found to be thoroughly practical. It is in this that the value of the work lies, and we think that it would have been better to have restricted the volume to this aspect of the subject. The occasional references to the underlying scientific facts will not help the practical man, nor would they if they were free from the errors that now disfigure them. A volume of practical instructions is not the place for a page or two of chemical equations or the expression of theoretical views that have often been called in question. However, these occupy but little space, and scarcely interfere with the use of the book as a strictly practical manual.

*Der Gegensatz zwischen geographischer und nicht-geographischer Variation.* By Karl Jordan. Pp. 59; with 73 figures in the Text. (Leipzig: W. Engelmann, 1905.)

THE present treatise affords an excellent example of the light that may be thrown on questions of biological interest by the scientific use of entomological data. Dr. Jordan here presents a valuable *résumé* of some of the most important results of the elaborate investigation of the chitinous sex-organs of insects, more particularly the Papilios and Sphingidæ, carried on by him for many years past at the zoological museum at Tring. These researches, the detailed results of which have already appeared in the pages of "Novitates Zoologicae," are of high interest, not only to entomologists, but also to all students of the methods of evolution.

It must, however, be confessed that the author's interpretations are less acceptable than his facts. Starting from the position that "species" have a real objective existence, he endeavours to show that new species could only have arisen from geographically isolated variations, not from variations occurring side by side with the parent form. The main fact on which he relies is that while "individual" or "seasonal" variation of forms inhabiting the same locality is never accompanied by a variation in the sex-organs (with the single known exception of *Papilio xuthus*), the diverse geographical forms of a species are in very many cases found to be distinct from one another in sex-organs as well as in aspect. There is thus a correlation in the latter case which does not exist in the former, and which seems to the author to warrant the conclusion that these geographical forms only can occupy the position of incipient species. Some of the obvious objections to this view are dealt with by Dr. Jordan, others are left unnoticed.

A slight inaccuracy occurs on p. 177, where a figure of *Byblia goetsius* is said to represent *B. ilithya*, while the true *B. ilithya* bears the legend *B. anvatara*; both mistakes being repeated in the text. A more serious matter is the absence of any detailed reference to Mr. G. A. K. Marshall's work on this genus and his remarkable discoveries in the genus *Precis*. Some special recognition of these should have found a place, even in a treatise of general nature like the present. It will be gathered from what has been said that Dr. Jordan's conclusions are open to criticism. There can, however, be no

doubt as to the value of the researches so ably carried on by himself and others in connection with the ample material of Mr. Rothschild's museum at Tring.

F. A. D.

*Butter-making on the Farm and at the Creamery.*

By C. W. Walker-Tisdale and T. R. Robinson.

Sixth edition, revised and enlarged. Pp. 162.

(London: Office of the Dairy World, 1906.) Price 2s. 6d. net.

WE import into the United Kingdom perhaps twice as much butter as we make, and pay twenty millions yearly for it. Some, at least, of these millions would have been saved to the agricultural industry if our farmers and dairymen had given as much intelligent study to the principles of butter-making as, for instance, the Danes have done. Unfortunately, however, in such matters as the use of centrifugal cream-separators, the employment of pure bacterial cultures for "starters," and the general organisation of the industry, we did not lead the way; we were content to follow, and that, too, with somewhat halting footsteps. Even now the small butter-maker is often a sad empiricist. If cleanliness, for example, is an article of faith with him—and frequently it is not—he holds it as a dogma, not as reasoned knowledge.

The little book under notice may help in the recovery of some of those lost millions. It gives an outline of approved present-day practice in butter-making, though it does not purport to offer much in the way of theoretical explanation and discussion. Mainly it is an account of how best to conduct the operations of a small modern dairy. It is practical and simple; well suited for the elementary dairy-student, for the farmer's son who wishes to know something more than mere rule-of-thumb work, and for the private maker who supplies his own household from his own cows. The first few pages deal with the design, construction, and equipment of the dairy. Then cream is considered, and its separation and "ripening" are described, after which we pass to the churning and subsequent operations. A number of simple arithmetical examples are worked out to illustrate various points that arise. The last thirty pages deal, briefly and in a more technical manner, with the operations of a fully-equipped creamery, including "pasteurisation" and refrigerating.

The book does not profess to be much more than a useful note-book and practical guide, but as far as it goes it is excellent.

C. SIMMONDS.

*The Deinhardt-Schlomann Series of Technical Dictionaries in Six Languages: English, German, French, Italian, Spanish, Russian.* By Kurt Deinhardt and Alfred Schlomann. Vol. i. The Machine-Elements and Tools for Working in Metal and Wood. Together with an Appendix, edited by P. Stülpnagel. Pp. 403; 823 illustrations. (London: Archibald Constable and Co., Ltd., 1906.) Price 5s. net.

THIS volume is the first of a series intended to aid engineers and others in reading technical works in any of the principal modern languages. Terms of general importance only are included; they are classified into subjects and many are accompanied by an explanatory sketch. Formulæ and symbols, serving as they do the purpose of an international language, are introduced wherever possible. The translations have been tested in workshops and offices in the various countries represented; so the work ought to prove of service in reading technical literature. The convenient pocket size of the dictionary, the systematic arrangement of its matter, and the full alphabetical index of words in each of the six languages should gain for it a sphere of usefulness among technical students.