headway except with two or three of the most worked orders. It is unfortunate that this appendix contains almost no references to economic entomology apart from those on biological control.

No review would be complete without some reference to the illustrations—forty plates from coloured photographs and thirty-two in half-tone—which are an outstanding feature of this book. Not all are uniformly good, but most are excellent. The coloured 'close-up' of a Capsid bug about to plunge its stylets into a plant (Plate 37) is particularly successful. Some of the coloured illustrations have that disagreeable aniline quality—but the book should be read only by artificial light; then almost all are wholly delightful, and even Plate 5 of *Libellula depressa* is tolerable.

Some typographical errors there are, but not a great many. On Plate 18 the large white butterfly is called *Pieris rapæ*; in Plate 34*b* surely the yellow larva at the top is the prepupal instar of the gooseberry sawfly. As in the other volumes of this series, the editors state that they have done their best to see that the author has got his facts right, but that he alone is responsible for what he says about them. Is this statement really necessary?

V. B. Wigglesworth

## ALGEBRAIC GEOMETRY

### Methods of Algebraic Geometry

By Prof. W. V. D. Hodge and Dr. D. Pedoe. Vol. 1. Book 1: Algebraic Preliminaries; Book 2: Projective Space. Pp. viii+440. (Cambridge: At the University Press, 1947.) 30*s*. net.

"THIS volume is the first part of a work designed to provide a convenient account of the foundations and methods of modern algebraic geometry." These words from the authors' preface explain the scope of the present volume and account for the selection of topics treated. It has become increasingly clear in recent years that a rigorous treatment of algebraic geometry must be based, to a much greater extent than the classical accounts of the subject, on algebraic principles. It is therefore no occasion for surprise that more than a third of the volume under discussion is purely algebraic. The first four chapters constitute, in fact, a clear and concise introduction to the theory of algebraic fields, polynomials and matrices (over a ground field which is not necessarily commutative). This account is in itself most valuable, since the modern point of view in algebra is not to be found in many English works, though several accounts have been published in the United States.

The next two chapters deal with the foundations of projective geometry, first on an algebraic and then on a purely synthetic basis. A comparison in detail of these two independent formulations of the theory is full of interest. It will be noticed, for example, that the synthetic treatment is much longer. This is due in part to the fact that it starts from abstract axioms, whereas the algebraic development presupposes a knowledge of fundamental algebraic results; but a second and most significant reason is that in the synthetic treatment it is necessary to consider in detail a rather large number of special cases (in themselves of a somewhat trivial nature) in order to assert the validity of general theorems. It is not always sufficiently realized that the apparent elegance and brevity of a synthetic proof of a geometrical theorem may conceal tacit assumptions as to the generality of the figure under discussion which logically demand examination. A novelty in the present treatment, which otherwise follows classical lines (though with unusual care in matters of detail), is that the assumption of Pappus' theorem is deferred until after the introduction of co-ordinates.

The remaining chapters deal with Grassmann co-ordinates (where one would welcome, if possible, the introduction of a more elegant notation), and with the general theory of collineations and correlations, and the reduction of their equations to canonical forms. The geometrical content of the book thus never leaves the domain of projective geometry; the more general birational theory will presumably appear in the second volume.

This treatise is likely to become a standard work. It is notable for its clarity of treatment and for the rigour of its demonstrations, and will repay careful study even in those parts which deal with matters generally considered familiar. The printing maintains the standard that we have come to expect from the Cambridge University Press. J. A. Todd

## DISTRIBUTION OF TIME IN BRITAIN

### British Time

By Donald de Carle. Pp. 199+47 plates. (London: Crosby Lockwood and Son, Ltd., 1947.) 15*s*. net.

MR. D. de CARLE has assembled a great deal of interesting information regarding the standardization and distribution of time in Great Britain. The majority of people take for granted the accurate time available from such sources as the B.B.C. time signals, Big Ben and 'TIM'. After a brief opening chapter on various early forms of time-keepers, the author deals with the history and present constitution of the Royal Observatory, Greenwich; this chapter brings out the astonishing accuracy with which time is measured and distributed over the radio, and further emphasizes the fact that the pendulum clock is giving way to the quartz-crystal clock when the highest possible accuracy is required.

Reference is made to the facilities for testing watches and the issuing of 'Kew certificates', and in Appendix 2 details of the test and specimen performances of watches obtaining various numbers of marks are given.

Chapters 4 and 5 deal with the development of the clock and the clockmaking industry in Britain, the section on Big Ben serving to emphasize what a redoubtable machine it is, both from the point of view of size and accuracy of performance.

The section dealing with electric clocks contains much information, particularly regarding the development of the Shortt clock, but the description of the quartz clock is unfortunately rather poor.

The chapters on the need for time signals and their history, and the evolution of 'TIM' are of particular interest, and the great amount of development work needed to produce the latter excellent service is given due prominence.

Although the style and lay-out of the book might have been better, it contains a range of information which is not collected together in any other publication, and the book can therefore be recommended with confidence to anyone interested in the subject of time and timekeepers. R. A. Fell