

Real Projective Plane; then affine, projective and 'absolute' geometry are dealt with in turn, the last-mentioned being based on the notions of separation and congruence; the finite groups of isometries (crystallographic point groups) come under this last heading, and hyperbolic geometry is treated as a specialization of it, alternative to Euclidean.

Part 4 is mainly devoted to the differential geometry of curves and surfaces; but the last two chapters deal with the topology of surfaces (based mainly on the Euler-Poincaré characteristic) and with (Euclidean) four-dimensional geometry, especially that of the six regular polytopes.

It will be seen that the matter covered ranges from the elementary to the quite advanced. But the treatment is so lucid that the reader is carried on without difficulty—here and there indeed one is apt to be left amazed that topics one has taught for years are so simple after all. It is a book to be heartily enjoyed.

PATRICK DU VAL

FUNDAMENTALS AND APPLICATIONS OF QUANTUM MECHANICS

Quantum Theory

Edited by D. R. Bates. Part 1: Elements. (Pure and Applied Physics: a Series of Monographs and Text-books, Vol. 10-1.) Pp. xv+447. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1961.) 10 dollars; 80s.

THIS is the first of a series of three volumes designed to provide an advanced, but fairly complete, text on the fundamentals and applications of quantum theory. This particular part is sub-titled *Elements*. It comprises nine separate chapters, written by seven different authors. The chapters vary from only 18 pages (on "The Variational Method") to 136 pages (on "The Theory of Collisions"). As is implied by the sub-title these chapters are not intended to deal with any particular applications, but they set out to provide the basic framework and techniques. Thus, after two chapters on the fundamental principles of quantum mechanics, there are chapters on exactly soluble bound state problems, the continuum, stationary state perturbation theory, the variational method, the Wentzel-Kramers-Brillouin (*WKB*) approximation (which, the authors suggest, should be re-christened the *AA*—or asymptotic approximation—method), transitions and collision theory.

The standard of knowledge assumed is that which may be expected in a third- or fourth-year mathematics student at a British university. The material covered is what it claims to be, the central part of the field. There does not seem to be very much missed out which one would have expected to find.

A collective work of this kind inevitably has both advantages and disadvantages. The chief advantage is that most of the writers are themselves experts in their own field, so that they can provide an authority impossible for one person in so wide a variety of topics. But the compensating disadvantage is that there is an overlapping of material, and occasionally disturbing differences of notation. For example, the impact parameter is defined no less than three times, and the Born approximation and the virial theorem twice.

There is some good stuff here: and, of course, it is absolutely up to date. However, my personal feeling is that with so distinguished a series of authors it is a pity that the level could not have been made a little more advanced, for there are places where a more sophisticated type of approach would have been more powerful. But to raise the level in this way would be to make the book less suitable as a general text-book. If some sort of compromise has to be made—as it obviously has—the present is probably about as good as it could be. If the remaining two parts are as successful as this first part, then the whole collection will undoubtedly prove a very useful reference source for people beginning their research in almost any branch of quantum theory.

C. A. COULSON

RECOGNITION AND CONTROL OF TERMITES

Termites

Their Recognition and Control. By W. Victor Harris. Pp. xii+187+65 plates. (London: Longmans, Green and Co., Ltd., 1961.) 40s. not.

CONSIDERING the importance of termites in tropical and sub-tropical countries, so many of which have the strongest of economic ties with Great Britain, it is rather surprising that no book of this kind has hitherto been published in the British Isles. With nearly a quarter of a century's experience behind him as an entomologist in the tropics, and as head of the Colonial Office Termite Research Unit, Victor Harris has a fund of specialized experience on which to draw in writing this book. Indeed, in reading it, one feels that he has so much to say that it cannot be said fast enough. In places this has resulted in a construction that might well prove a little puzzling to readers not too well acquainted with the English language, who may be numerous.

The book falls readily into two parts. The first is concerned with biology, morphology, classification and identification. In an order of insects in which the species are all relatively so simple and uniform morphologically, definition of species presents such difficulties to the taxonomist that it is scarcely surprising to find that the keys stop at family-level. Beyond that point the soldiers and winged adults may provide morphological characters permitting recognition of the genus. "Workers have few specific characters . . . and may become recognizable on acquaintance." Termites, indeed, still present a challenge to the taxonomist. It is fortunate for the economic entomologist, whose concern is with control, that identification to species is relatively unimportant, as compared, for example, with Hemiptera or mosquitoes, in the control of which it is essential. A curious feature of the chapter on classification is the absence of any comparative statement indicating how termites are to be distinguished from other insects, particularly the true ants: perhaps the complete lack of any reference to 'white ants' is deliberate? However, Mr. Harris's comprehensive summary of his views of the classification of termites, set out in this chapter, leads one to hope that he may give fuller expression to them elsewhere. This general account of termites ends with a most interesting chapter on the manner in which termites affect the soil that the vast majority of them inhabit.

In what might be called the second part of the book, termites are treated in relation to the crops,