science, and I am not sure that Poggio has expressed his ideas in a simple enough form for us to understand. But this part of the book is certainly a novel attack on a most important problem, and one leaves the book as a whole in a rather more optimistic mood than is usually the case after a dose of brain theory. Instead of feeling that the subject matter is incoherent and totally unapproachable, one feels that, within the framework set out, the brain may, ultimately, become comprehensible. □

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Entomology — and how the West was won

Philip S. Corbet

From Arsenic to DDT: A History of Entomology in Western Canada. By Paul W. Riegert. Pp.357. ISBN 0-8020-5499-4. (University of Toronto: 1981.) $30. To be published in the UK on September 24, £18.

THE history of Canadian entomology has received close and expert scrutiny before. Compa[illegible]ounts — by R. [illegible]71; 1956) and G.[illegible], 33–59; 1963) [illegible]tractively present[illegible]cope but much [illegible] development [illegible] applied entomo[illegible]provinces of Can[illegible] the first Europe[illegible]after the Second [illegible]ynthetic organic chemical insecticides were starting to transform the practice of pest control. (The history of forest entomology is omitted because Riegert discovered that such a document had recently been prepared.) As it stands, this book provides a wealth of detail on subjects as varied as the daunting mosquito attacks recorded by traders in the early seventeenth century, instructions for making and applying "Criddle Mixture" (a horse-manure-based poisoned bait for grasshoppers) and the progressive evolution and enforcement of interprovince quarantine regulations.

The five main parts of the book are devoted to encounters between European colonists and insects; the first professional entomologists; the insects of British Columbia — mainly mosquitoes and orchard pests; the insects of the prairies — including the wheat-stem sawfly, grasshoppers, cutworms and wireworms; and specialized topics such as medical and veterinary pests, stored-products insects, and the teaching of entomology in universities.

A brief, admirably succinct, epilogue reviews the main personalities and events which attended the growth of applied entomology in western Canada from the 1880s to the 1950s — "from arsenic to DDT" — and ends by listing some of the lessons to be learnt from this richly documented set of case studies.

The author's style tends to be somewhat florid for my taste, and his inclusion of diverse anecdotal and factual material at times impairs the fluency of the text, although this seems a modest price to pay for the exhaustive background information he provides. A map would have been a useful adjunct to the excellent contemporary photographs.

This book will certainly appeal to those wishing to learn, or to be reminded of, the circumstances and individuals that have helped Canadian entomology to become so vigorous and effective; and, for the sake of the discipline's continuing health, one may wish that such readers will include those who decide the resources to be allocated to entomology by future Canadian governments! As a contribution to the existing literature on the history of entomology, Riegert's book has undoubted value in several other respects. Using a canvas of manageable size, he delineates the changing pattern of agricultural and veterinary entomology in a developed, though recently settled, country which is prone to severe pest problems. The extremely detailed description of these problems — including contemporary recipes for their mitigation — and the frank but sensitive description of the men and institutions concerned with pest management, may attract the interest of social historians as well as applied entomologists. One may hope that those destined to practise and administer applied entomology in Canada and elsewhere properly appreciate the realities of large-scale pest suppression when synthetic organic chemical pesticides are not available. People who read this book will surely gain such an appreciation; and in doing so they will come to share the author's high regard for the immensely able and resourceful pioneer entomologists who successfully tackled some of the most intense insect attacks ever to be endured by human beings.

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Not quite Allard

C.N. Law

The Theory of Plant Breeding. By O. Mayo. Pp.293. ISBN 0-19-854536-3. (Clarendon/Oxford University Press: 1981.) £30, $89.

PLANT breeding has long required an up-to-date and authoritative textbook. It is now over 20 years since what many regarded as a good book on the subject, *Principles of Plant Breeding* by R.W. Allard (Wiley, 1960), first appeared. Since that time numerous attempts have been made to write a worthy replacement but with limited success. This book on the theory of plant breeding, by O. Mayo, is likely to receive a similar assessment. This is a pity, since the book has merit and touches on much that needs to be said about plant breeding and related sciences.

The book has 17 chapters, of which seven of the longest describe methods of genetic analysis, the properties of genetic systems in inbreeding and outbreeding crops, the response of such systems to environmental variables and different selection pressures. These are then followed by several short chapters on induced mutation, disease resistance, somatic cell genetics and, as if as an afterthought, further cytogenetical manipulations. The final chapters discuss the conservation of germplasm and aspects of plant breeding strategy.

A number of errors occur, mainly of omission. Thus, the author is rather cursory in his treatment of the covariance–variance analysis of diallel crosses, and is apparently not aware that the creators of this analysis have been at pains to point out its weaknesses in detecting certain types of gene action. Likewise, the treatment of the genetical causes of heterosis leaves much to be desired, particularly since the author appears to labour under the misconception that heterosis is a phenomenon still awaiting a genetical explanation.

Far too frequently important methods and issues are mentioned *en passant*, when more detailed and penetrating accounts are demanded. This is a disappointing feature which probably arises from the stated objectives of the book, which are to give an account of plant breeding theory but not to provide extensive descriptions of proofs or methods. However, one questions whether this is a wise decision when such an important aspect as breeding for disease resistance receives only three pages of text. The impression emerges that the author has much to contribute in writing about the theory of plant breeding; but either he has been overly constrained by limitations on the size of the book or he has been perhaps too unambitious in his objectives. He should be encouraged to build upon the firmer foundations of this book as well as to include views about the practice of plant breeding in any future edition. □

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