reader: in my local public library this great book has been issued once in the three months since it was acquired. How many ornithophilic Pauls have still to take their road to Damascus?

HUGH BOYD

Insect Sex Attractants, by **Martin Jacobson.** John Wiley, 60s.
One of the best examples of evolution in action today is the spread of strains of insect pests which are resistant to insecticides. Within a very few years it was found that far higher doses of insecticide were needed to kill a pest than were originally sufficient. This led to a vicious spiral of increased doses and more frequent application of insecticide, and to those 'side effects' which have become so widely known through Rachel Carson's *Silent Spring*.

The welcome result has been a new interest in the search for specific insecticides and also for sex attractants which might be used to lure amorous insects to their doom. The complex chemical signals which female insects employ to attract males, often from great distances, and the complex scents and scent-distributing organs which male insects use to signal their arrival, are only just beginning to be studied. This book provides some information about 150 kinds of insect—out of some thousands of known pests. It is to be expected that insects cannot easily evolve changes in so fundamental a process as that which brings the sexes together, and the exploitation of their natural specific behaviour may eventually provide reliable and specific remedies for particular insect species which cause crop damage or transmit diseases to man or domestic animals.

This book seems to have been written in rather a hurry. It is not an exhaustive treatise on the subject of insect sex attractants; although references are made to some 400 scientific papers the author has not looked much beyond the literature published in the USA, Canada, the UK, and Germany. He is clearly an expert chemist, but appears to have little first hand knowledge of insects (on page 92 the house fly and the honey bee are both listed as *Diptera*). Written for the specialist, not the layman, the book will serve a useful purpose in making some of the facts more widely available, and speed the arrival of the day when truly specific methods will be available for pest control.

G. C. VARLEY

Grasshoppers and Locusts, Volume 1, by **Sir Boris Uvarov.** Cambridge University Press, £5.
Periodical surveys of the vast literature on such well studied groups as the locusts are of great value, and two such surveys rank among Sir Boris's most useful contributions to entomology. The earlier one, *Locusts and Grasshoppers* (1928), was published in one volume, but it was found necessary to divide the present one into two: the first deals with anatomy, physiology, development and taxonomy; the second will cover biology and control. About half this first volume is taken up with an account of the structure and function of each system of the body, presented with the utmost clarity. In addition to numerous diagrams and graphs, there are comparative charts bringing together in a most useful way the results of past studies. Two valuable chapters on temperature and water relations are followed by a detailed account of development, from embryology to reproduction.

The theory proposed by Sir Boris 45 years ago that locusts exist in two

phases, solitary and gregarious, and that it is only in the latter phase that swarming and damage take place, has probably attracted more attention than any other aspect of locust research. He now gives a comprehensive review of the laboratory studies that have provided conclusive support for this theory, and demonstrates that an appreciation of phase variation is fundamental to the understanding of locust biology. The significance of phase variation in locust ecology and control will be discussed in the second volume. The last section of the book gives an introductory account of the taxonomy of the *Acridoidea* and a classification of the group down to the level of subfamily, with all the genera and species mentioned in the book listed in the appropriate places. The concluding bibliography of over 1,400 titles includes papers published as recently as 1965.

This excellent book is essential reading for the locust worker and can hardly fail to interest any serious biologist.

DAVID R. RAGGE

THE WHOOPING CRANE STORY

IN 1945 the number of whooping cranes in North America had dwindled to fewer than 30 birds. Their wintering grounds in Texas were protected, but their breeding grounds in Canada could not be protected because nobody knew where they were. In *The Hunt for the Whooping Cranes* (Lothrop, Lee & Shepard, New York, $4.50), J. J. McCoy describes the gradual narrowing down of the hunt until success was achieved in 1954, when the pilot of a Forestry Service helicopter in Wood Buffalo National Park, investigating a fire near the park boundary, radioed that he had sighted three whooping cranes in a desolate area of shallow lakes and ponds. The discovery was just in time, for that autumn only 21 whoopers returned to Texas and not a single young bird of the year. To-day the numbers have topped the 50 that Robert Porter Allen, leader of the hunt, regarded as the minimum necessary for survival. It is an exciting and interesting story, intended for young people, marred only by what the publishers call the writer's "suspenseful narrative style".

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