attention should be directed to it rather than, for example, to the more elementary processes of sampling which are apt to be explained and discussed *ad nauseam*.

As Mr. Moser puts it, "our knowledge of data collection is, by comparison, primitive . . . One part of the survey process is tackled by a tool of high precision that makes accurate estimates of errors possible, while in the other parts errors of generally unknown proportions subsist". The impression is thus given that the high degree of accuracy with which the results of large-scale surveys are frequently stated may be misleading, perhaps very misleading indeed. This is probably true. Much more research into this difficult problem is required.

T. S. SIMEY

PLANTS OF THE FARM

Agricultural Botany

By Dr. N. T. Gill and K. C. Vear. Pp. viii+636. (London: Gerald Duckworth and Co., Ltd., 1958.) 63*s*. net.

ALTHOUGH botany began as the collection of information about economic and medicinal plants, the modern teaching subject of agricultural botany emerged as an eclectic version of 'pure' botany, based on economic examples. This was the plan of the late Prof. Percival's well-known textbook, even up to its last edition in 1936. Since the turn of the century, however, several fields of endeavour have developed a structure and outlook of their own. Thus, plant pathology and plant breeding are to-day largely independent disciplines, recognizably distinct in their methods of thought and action from mycology or genetics. Comparable trends are evident in crop physiology. The subject as a whole seems to be developing a coherent unity along lines indicated in part by Vavilov, and based upon the ecological connexions between its parts. This may well lead agricultural botany to a relationship to pure botany not unlike that of engineering to physics.

Against this background the present work is distinctly disappointing. It consists of a reasonably detailed and well-illustrated conspectus, on a taxonomic basis, of the agricultural and horticultural plants and weeds of temperate regions, with some tropical crop species added (400 pages), sandwiched between very much less satisfactory and far less well-illustrated accounts of plant breeding and plant diseases (about 100 pages each). Its stated aim is to meet the requirements of agricultural diploma and pass-degree students; but it would seem that many of them will find the systematic part more than adequate for their needs, while remaining unsatisfied by the remainder.

More serious than this lack of balance is the almost complete absence of any account of the extensive modern work on the physiology and ecology of crops and weeds. Yield is usually the most important characteristic of economic plants. The analysis of plant growth and yield is consequently an essential part of the contribution botany can make to farming; indeed, it can be thought of as the theoretical basis of agriculture. Yet the outstanding advances of the past thirty years in the study of the crop as an assemblage of growing and competing plants, continuously influenced by varying environmental factors, is not reflected in these pages.

The principal merit of the book, then, lies in the systematic description of agricultural plants, which fills a need by bringing together a useful body of fairly up-to-date information not elsewhere available in one volume. For this the work may be recommended, though the price may seem unduly high to some.

A. H. BUNTING

". . . THE EAST WIND BROUGHT THE LOCUSTS"

Insect Migration

By Dr. C. B. Williams. (The New Naturalist: a Survey of British Natural History.) Pp. xiii+235+24 plates. (London: William Collins, Sons and Co., Ltd., 1958.) 30*s*. net.

AMONG British entomologists who have worked in the tropics within the past generation, there are probably not many for whom a visit to Rothamsted has not provided stimulation, together with an injunction from Dr. C. B. Williams to keep a look-out for butterfly migration. All who heeded his injunction, and all who know his comprehensive and critical book on this subject, published in 1930, will welcome this entertaining and copiously illustrated addition to the admirable "New Naturalist" series.

The present book, however, is perhaps one to arouse interest rather than to satisfy it. A serious reader, seeking to follow up some tantalizing allusion, and undaunted by an absence of references in the text, is still likely to be frustrated by the slim bibliography, with its sixteen titles since 1942, out of the several hundred of which Dr. Williams tells him—and makes use. Moreover, in the introduction the author makes a distinction between deliberate migration and drift on the wind, and he defines migration as "a continued movement in a more or less definite direction, in which both movement and direction are under the control of the animal concerned". But he does not say a great deal about the extent to which the material he presents satisfies his own definition: some species appear to be described as migrants mainly because they are often seen a long way outside their breeding areas—without much consideration of any contribution which may be made to these geographical displacements by the winds at the time.

Dr. Williams's editors suggest that his book may almost be regarded as a world detective story; and he tells how, for locusts, the original case for deliberate long-range migration appears to have collapsed under the evidence of synoptic meteorology. But in this book his own approach sometimes suggests the compiler of criminological statistics rather than the detective. Thus, eleven pages of tables, and four figures, demonstrate that a number of species of butterflies and moths have been recorded in Britain more frequently in some years than in others; but there is little examination of any possibility of an association of environmental conditions with such occurrences and their fluctuations—which is the more disappointing in view of Dr. Williams's own pioneer work on the effects of weather on insect populations.

But his readers, like the followers of the best detectives, will look forward to meeting him again