

the study of hybrid swarms, and, it is claimed, in practical plant and animal breeding.

One of the commonest features of hybrid swarms is the tendency which they have to merge with either or both of the parent species by repeated back-crossing. The process by which genes pass from one species to another was named "introgressive hybridization" by Anderson and Hubricht in 1938, though the possible importance of the gradual infiltration of the germ plasm of one species into another was suggested by Ostenfeld in 1927. It is somewhat unfortunate that the author makes no attempt to deal adequately with the literature on introgression. For its evolutionary and taxonomic significance the reader is referred to other sources. Yet from the title of the book it might be expected that the subject would be discussed from the broader point of view of its significance to the general biologist interested in evolutionary mechanisms, and in this way appeal to a much wider audience.

It is stated that the quantitative methods described are useful in practical plant breeding. It is also claimed that, by using these quantitative methods upon a hybrid population, an exact description of a parental species component can be made without ever having seen it.

The soundness of this claim must be judged from the wider aspect of what happens when single genes are transferred from one species to another by repeated back-crossing. More work has probably been done on interspecific gene transference in *Gossypium* (cotton) than in any other genus. Here it seems that a recessive gene can pass from one species to another and be incorporated without much visible effect, except that resulting from interaction with a new set of species modifiers. Dominant genes, however, are usually accompanied by a series of modifiers which enhance their effects. When these dominants pass to a species with the corresponding recessive alleles, they often become so denuded of their modifiers as to produce almost negligible effects. In such cases it would not be possible to compile a taxonomic description of the non-recurrent species, and the view that it is generally possible to do this must be held to be genetically naïve.

But this short (and expensive) book is a mine of valuable ideas—valuable as much for their novelty as for their presentation by a biologist who has always succeeded in stimulating his readers and making them think.

S. C. HARLAND

HYDRODYNAMICS, CLASSICAL BUT MODERN

Theoretical Hydrodynamics

By Prof. L. M. Milne-Thomson. Second edition. Pp. xxiii+600+4 plates. (London: Macmillan and Co., Ltd., 1949.) 60s. net.

THE first edition of this well-known book appeared in 1938 and was characterized by the consistent use of the vector notation and a carefully lucid exposition. The author explains in the preface that the book is founded upon lectures given at the Royal Naval College, Greenwich, to junior members of the Royal Corps of Naval Constructors, and that his object is to give a thorough, clear and methodical introductory exposition of the mathematical theory of fluid motion, such as may be useful in applications to hydrodynamics and aerodynamics. It may be said

at once that the author has succeeded in his aim, subject, however, to certain important limitations in the scope of the book. Thus, although one chapter is devoted to the discussion of the motion of viscous fluids, the theory of the boundary layer is dismissed in three pages, and the author states: "The theory of the boundary layer serves as a useful guide to experimental work and gives a qualitative description of viscous motion near a boundary, but its applications have so far been of a tentative and empirical character". I cannot accept this as an unbiased assessment of the present status of the boundary layer theory, and would record the widely held opinion that the study of the boundary layer is of fundamental importance for the advancement of the dynamics of real fluids.

The second edition now under review retains the characteristics of the first, but contains a considerable amount of new material, much of it relating to recent research. A new chapter entitled "Subsonic and Supersonic Flow" gives an elegant and very concise account of the motion of inviscid compressible fluids, typically perfect gases. This includes an account of the hodograph method, with Chaplygin's equation and the applications of the hypergeometric function, and of the method of characteristics. Novelties not concerned with compressible fluids include the 'circle theorem', due to the author himself, which establishes a very simple general formula for the interference produced by a fixed circular boundary in two-dimensional flow; by means of the theorem the potential of the image system can be written down at sight. The corresponding theorem for a fixed spherical boundary is also given; this is due to Weiss and is rather less simple. A recently introduced conception of importance is the vector circulation, which plays a part in three-dimensional flow similar to that of the scalar circulation in two-dimensional flow.

We may sum up by saying that the book gives a lucid account of classical hydrodynamics, including the results of much recent research. Its value as a college text-book is enhanced by the inclusion of 558 examples, drawn largely from university examination papers. The printing is excellent; but the price is regrettably, if justifiably, high.

W. J. DUNCAN

DOCUMENTATION OF THE NITROGEN COMPOUNDS OF NAPHTHALENE

Elsevier's Encyclopædia of Organic Chemistry

Edited by F. Radt. Series 3: Carboisocyclic Condensed Compounds. Vol. 12B: Naphthalene, A, Compounds containing One Naphthalene Nucleus—Nitrogen Compounds. Pp. xxxvi+345-1052+Ind. 75. (New York and Amsterdam: Elsevier Publishing Co., Inc.; London: Cleaver-Hume Press, Ltd., 1949.) £18 to subscribers of the whole work.

THIS second part of Vol. 12B consists of 708 pages of text and 75 pages of indexes. The first part has already been reviewed in these columns (see *Nature*, 163, 822; 1949; and, for a general description of the whole project, see *Nature*, 161, 415; 1948). The nitrogen derivatives of naphthalene which are treated within the compass of this second part include the various nitro compounds of naphthalene