

A SYNTHESIS OF GENERAL EMBRYOLOGY

Introduction to General Embryology

By Prof. A. M. Daleq. Translated by Jean Medawar. Pp. vii+177. (Oxford: Clarendon Press; London: Oxford University Press, 1957.) 25s. net.

THIS "Introduction to General Embryology" is the outcome of a series of thirteen broadcast talks given by Prof. Albert Daleq in 1951 at the request of the "Université radiophonique" of Paris. These lectures were published in French by Prof. Daleq in 1952, under the title "Initiation à l'Embryologie générale". This small book soon became a classic for students—not only Prof. Daleq's own, but also for those of his former students who, like the present reviewer, have the task of teaching experimental and chemical embryology in university courses. In fact, Prof. Daleq's book is much more than an introduction to embryological problems; it is a masterly synthesis of our present knowledge in the field, as well as the expression of the scientific and philosophical ideas of one of the world's leading embryologists. The translation of Prof. Daleq's book into English is especially welcome, since the author has brought up to date the first nine chapters of the French edition, has rewritten the remainder and added a new chapter devoted mainly to his recent important work on mammals.

Prof. Daleq starts with a question that is puzzling for too many laymen: Why should one study embryology? After showing the importance of this science for practical (artificial insemination) and medical purposes, he emphasizes the close relationship existing between embryology and allied disciplines (cytology, genetics, study of evolution). He points out—and this is one of his favourite ideas—that the main abilities of the human mind are all inborn: the nature of psychic activity might be discovered from studies made on the embryo. It is perhaps one of Prof. Daleq's secret hopes that a psychological analysis of the developing embryo will some time become a reality.

Chapter 2 is a clear and brief account of the history of embryology. The reader is immediately placed in the middle of the eternal preformation *versus* epigenesis controversy. The next chapter is devoted to the methods used by present-day embryologists.

In Chapter 4, the main cellular constituents, at the morphological and biochemical levels, as well as the formation of the gametes, are briefly described. The next chapter deals mainly with fertilization and parthenogenesis. The title of Chapter 6 is "A Discussion of Terminology": after describing cleavage and gastrulation, Prof. Daleq concludes that ontogenesis begins necessarily with immediate or delayed cleavage; morphochoresis corresponds to both gastrulation and neurulation; it is followed by cytodifferentiation and growth.

The next chapters introduce the reader to the realm of experimental embryology. The classical experiments in which one of the blastomeres of the two-cell stage is destroyed, or in which the two blastomeres are separated from each other are clearly described and discussed. The significance of, and the difficulties inherent in the use of, such terms as mosaic and regulative eggs are stressed. Prof. Daleq also explains what he means by "normogenesis" and "paragenesis"; normogenesis and regulation are at the two extremes, while paragenesis corresponds

to the intermediary anomalies of development, including exogastrulation, morphogenetic induction in vertebrate eggs, vegetalization or animalization in those of the sea urchin, etc.

In Chapter 10 the author analyses the many aspects of induction and introduces the very useful concept of "morphogenetic potentials". This is followed (Chapter 11) by a very interesting study of mammalian development, including Prof. Daleq's important studies on the cytochemistry of these eggs.

The scope becomes still broader in the next two chapters, which are devoted to the relationship between development, heredity, and evolution. Finally, in the last chapter, "Where do we stand?", Prof. Daleq brings together many facts derived from studies of asexual reproduction, regeneration, and embryonic development. He finishes this attempt at synthesis with a few remarks that summarize his philosophy of life and the living.

One must heartily congratulate the translator, Mrs. Jean Medawar, on her expert job. Prof. Daleq's style is elegant, elaborate, and precise. That all these qualities are found again in the English text deserves admiration. The presentation of the book is excellent and there are next to no typographical errors. Thanks to the quality of the paper, the reproduction of text figures (many of them original and slightly schematic) is much better than in the original French edition.

J. BRACHET

AGRICULTURE IN EAST AND WEST

Types of Rural Economy

Studies in World Agriculture. By Prof. René Dumont. Pp. xii+556. (London: Methuen and Co., Ltd., 1957.) 45s. net.

PROF. DUMONT is already well known for his studies of French agriculture: in this volume he ranges over a much wider field, including England, most of Europe, North and West Africa and northern Viet Nam, always, however, confining himself to places he has actually visited. The book is thus a series of vignettes, but the background is always broadly sketched in to keep a sense of proportion. In a disarmingly modest preface he describes the volume as a "preliminary exercise" by one who undertook these economic studies "too late in life to have acquired a really profound knowledge of them", but the apology is quite unnecessary: the most expert reader will gain a great deal from its pages.

The author's keen power of observation, and his ability to pick out and emphasize the essentials of the various systems described, give the book an exceptional value. He is equally interesting and informative whether he is dealing with the collective farms near Moscow and in Eastern Europe, the corridor system in the Belgian Congo designed to overcome the defects of the native shifting cultivation, or the skilful adaptation of agricultural systems to environment in the Alps.

He makes some shrewd and penetrating comparisons of British and French agriculture, one worked by tenant farmers, the other by peasants: characteristically he began his studies by working as a labourer on a small Shropshire farm. The English farmer, he found, operates on a larger scale, reduces manual labour to a minimum by heavy mechanization