of medieval Latin medical and anatomical terms, many of which are still employed, of the greatest value and interest.

Probably most students who are not masters of Eastern languages will value particularly Part 8 of the work, which is an English translation of the "Tabulae Sex", accompanied by 343 exhaustive annotations, and photographic reproductions of the six plates and Latin text. Of the "Tabulae" two complete sets of the original issue are all that have survived, but there are three facsimile editions, only one of which, however, is readily procurable. Now all interested can possess this excellent facsimile copy, which for the purposes of research is as good as the original, and for which we must express our thanks to the authors and also to the Wellcome Historical Medical Museum for undertaking the responsibility of production.

The book has been admirably printed and bound, but exception must be taken to the abominable backing of the six plates. The general editor of the series, Dr. E. Ashworth Underwood, informs us that this was the only material at the printer's disposal, and it was therefore either that or nothing.

Drs. Singer and Rabin are to be warmly congratulated on an addition to Vesalian literature which will surely rank as a classic in times to come.

F. J. COLE

PHYSIOLOGICAL EMBRYOLOGY

Einführung in die Physiologische Embryologie
Von Prof. F. E. Lehmann. (Lehrbücher und Monographien aus dem Gebiete der exakten Wissenschaften, 5.) Pp. 414. (Basel: Verlag Birkhäuser, 1945.) 38 Swiss francs.

THE years between the two World Wars saw a very rapid accumulation of experimental data bearing on the mechanism of development in many groups of animals, particularly the echinoderms and the vertebrates. By the end of the 1930's, most experimental embryologists felt the need for a synthesis, and the elaboration of a theoretical structure by which the facts could be held together in an illuminating way. The disturbances of the War necessitated a slackening in the pace of experimental work, and the leaders of most of the major schools of experimental embryology took the opportunity to try their hand at producing the necessary system of thought. Spemann, whose work provided the original inspiration for much of the recent progress, led off with his "Experimentelle Beiträge zu einer Theorie der Entwicklung" in 1936; then from America we were offered Weiss' "Principles of Development" in 1939, and Child's "Patterns and Problems of Development" in 1941; from Britain, Waddington's "Organisers and Genes" in 1940 and Needham's monumental "Biochemistry and Morphogenesis" in 1942; from Belgium, Dalcq's "L'œuf et son Dynamisme Organisateur" in 1941 and Brachet's stimulating "Embryologie Chimique" in 1944. We are still waiting, not too patiently, for a similar thorough treatment from the point of view of the Swedish school of Runnström and Hörstadius.

It is in the setting of this series of works that Lehmann's "Einführung in der Physiologische Embryologie" will be studied. Prof. Lehmann is known as one of the earlier of Spemann's pupils, and for the last twenty years a steady stream of interesting and very thorough papers have issued from his laboratory in Switzerland, mostly devoted to the analysis of organiser action in the Amphibia. Two thirds of his book are devoted to this group of animals. In the remaining third he discusses the recent work, mainly Swedish, on the echinoderms. This restriction of his field enables Prof. Lehmann to describe the experimental data in considerably greater detail than was possible in most of the books mentioned above, and his work thus provides a summary of facts which will be very useful to the student.

In other respects the results of this policy of exclusion are not so happy. Although the two groups chosen by Lehmann are undoubtedly those in which our knowledge is fullest, yet there are many suggestions of considerable importance to be derived from studies on other animals. Moreover, the epigenetic system of the echinoderm egg is so different from that of the amphibian that a mere discussion first of one and then of the other produces rather two separate monographs than one unified book. The two systems can scarcely be brought into fruitful relation without some account of the spiral-cleaving invertebrates and the Prochordates; while the most direct illumination of the difficult problems in amphibian embryology must be derived from the birds and fish rather than from a group so far removed as the sea-urchins.

Our understanding of the epigenetic processes by which the organism is formed is still at a fairly early stage. The end-results are living animals, organs and tissues. These cannot yet be fully comprehended in physical or chemical terms; and it is thus impossible that a purely physico-chemical theory of development could be adequate. Nevertheless, the theoreticians of experimental embryology are presented with a choice—they may choose to emphasize the more specifically 'biological' aspects of their subject-matter, or they may decide to try to formulate concepts which, as it were, lead towards the realm of physico-chemical ideas. Much of the recent work has been inspired by the second tendency. Although Prof. Lehmann faithfully summarizes this, and indeed speaks highly of its value, his most characteristic ideas seem to belong rather to the former trend. This impression may be partly due to the arrangement of his matter, which he divides into the purely descriptive, the 'entwicklungsmechanisches', and the physiological, a scheme which means that the treatment of each question, instead of proceeding steadily from the biological towards the physico-chemical, is broken into separate parts located in different chapters. This dislocation tends to diminish the field to which the more physico-chemical ideas are applied. Similarly, Lehmann relies to some extent, as any author dealing with this material must do, on such essentially unclear notions as 'fields', gradients, and so on. But he sets this aspect of his theories in the centre of the stage, and goes out of his way to emphasize its organismic character by the frequent use of long German phrases full of overtones —"plastisches Blastemfeld" instead of plain 'field', "Organisatorblastem" for organiser, and such expressions as "topogenetischen begrenzte Selbstorganisation", "kombinative Einheitsleistung", and so on. This type of approach is one which does not appeal to the reviewer as much as does that of some of the other recent works; but it represents a necessary corrective to any possible over-confidence in the complete adequacy of biochemical embryology in its present state.

C. H. WADDINGTON