EVOLUTIONARY DIVERGENCE

Evolution above the Species Level

By Prof. Bernhard Rensch. Pp. xvii+419. (London: Methuen and Co., Ltd., 1959.) 63s. net.

THE distinguished author of this book has long been known for his extensive studies on the island distribution of birds and other vertebrates, and of land snails. This work was done especially in the Malay Archipelago, on which he wrote a valuable treatise in 1936 (which for some reason he has omitted from the bibliography). It led him to take a profound interest in the formation of races and species, and their evolution. The word 'Rassenkreis' was coined by him. His monograph in 1929 on "Das Prinzip geographischer Rassenkreise und das Problem der Artbildung" is a classic. Later on he became engrossed with wider questions about the natural processes of evolution, not only in races and species, but also in the divergence and segregation, if that is the right word, of higher taxonomic groups.

The German edition of "Evolution above the Species Level" was published in 1947, but enhanced in a later version in 1954, of which this English edition is essentially a direct translation by Dr. Altevogt. It is a very solid book, crammed with argument and cited evidence, and well illustrated with text drawings. Though its style is certainly pretty heavy and liberally laced with ponderous terms like kladogenesis, archallaxis, bradytely and hylopsychie, the argument is clearly and powerfully developed. The central idea that the author seeks to prove is that the higher grades of phylogenetic branching can be explained by the same orthodox beliefs about natural selection as can race formation and speciation. This involves him naturally in an all-out attack on such directional theories as orthogenesis, which he takes considerable trouble to demolish.

Prof. Rensch has an enormous acquaintance with the literature on evolution, including many aspects of comparative anatomy and development, and he uses many different sectors of zoology as channels of argument, which are gradually united to try to prove the central theme. Although the general integrity of this sifting and assembling process is obviously high, there is a tendency to accept other people's facts and conclusions at their face value, instead of critically testing their authenticity. I was, for example, startled at being quoted in support of the view that there is no natural population balance in animal communities. The reader may perhaps feel as if he were walking through a very well-arranged museum, in which the tickets on each exhibit instruct him clearly what to believe. But the theories are put forward logically, and on the whole cogently. If one believes mutation and natural selection to be the sole basis of race and species formation, the rest of the argument follows fairly convincingly. But one should remain at liberty to wonder if the first assumption contains the whole truth about evolution. The evidence against such ideas as orthogenesis is powerfully marshalled and convincing, though it could partly stand alone on its own merits.

Two special chapters may be mentioned that are interesting, but slightly out of the main stream of argument: one on the absolute rate of evolution in producing taxonomic groups of different levels (that is to say, species, family, order), and another about the evolution of higher psychic processes. But the

main message is continually hammered at us: "The evolution of new structural types and of new organs needs no other explanation than specific and generic differentiation, i.e. the combined effect of mutation and selection". The book is beautifully printed, and there is a vast and useful bibliography.

C. S. ELTON

THE TWO HEREDITIES

The Future of Man

By Prof. P. B. Medawar. (The B.B.C. Reith Lectures, 1959.) Pp. 128. (London: Methuen and Co., Ltd., 1960.) 10s. 6d. net.

GOOD lectures when published often make poor reading. The 1959 Reith Lectures make good reading, though as lectures the author views them unfavourably: "they were too closely reasoned", he writes, "and often made unfair demands on the listener's attention". The conciseness of expression and the balance of phrases in neat antithesis, qualities which make listening difficult, are a virtue in print and in scientific writing a rare merit. Explaining the concept of 'fitness', for example, he writes: "All the people alive 100 years from now will be our descendants, but not all of us will be their ancestors". The reader can pause and look again—and often will in reading this text: the spoken sentence is past before the listener is aware that something important has been said.

The approach in the earlier lectures may have discouraged some of the less-sophisticated among his audience. "I decided that these lectures were to be about the process of foretelling (the future of man) rather than about what is actually foretold." In each of various aspects of forecasting human development, Prof. Medawar shows the complexity of the mechanisms involved. For example, on the relation between intelligence and fertility his lecture opens with five possible explanations of this relation and proceeds to show that the inference of a decline in national intelligence is equally complicated by difficulties. But this kind of discipline in thinking about the implications of the past half-century of research in human biology is precisely what is most needed. Since so few biologists have been willing to discuss their subject on this scale and in this strict way, the field has been left to the naïve thinkers and the propagandists to proclaim that medical science is preserving an unfit population, that birth control is bound to have evil consequences, that the laws of genetics have an over-riding authority. The positive contribution of these lectures is in their demonstration of the muddled thinking of the upholders of the doctrine of 'geneticism'—"the idea that man's genetic constitution is not merely important but all-important".

Do genetical laws set predictable limits to man's future development? This is the central theme of the lectures, and Prof. Medawar's position is in sharp contrast to that of the older social biology. The answer, introduced in the final pages, is that man has two systems of heredity, one genetical, one cultural: the interaction of these two systems changes the prospect entirely. This is really the beginning, not the end, of the topic of the future of man; but it takes the topic beyond biology into the social sciences.

The bringing together of these two systems of heredity suggests a comparison with another widely discussed lecture of 1959, the Rede Lecture, which