

exploitation. Other breeds of whales have not in the past had the advantage of scientific investigation; with the statistics which are now available, whalers cannot plead ignorance as they kill the goose that lays the golden egg.

The book is well printed on good paper. The

beginning and end of most chapters are embellished with witty line-drawings. Here is an unusual blend of liveliness and scientific accuracy, which should find a place in ships' libraries and on the shelves of all interested in the creatures of the deep.

A. H. L.

## A Catechism of Evolution

### Evolution and its Modern Critics

By Dr. A. Morley Davies. Pp. xii + 277. (London: Thomas Murby and Co., 1937.) 7s. 6d. net.

**B**Y evolution we understand that integration and combination of originally homogeneous atoms which has produced our world and its contents. These are governed mainly by physical forces, which are as yet little understood but which represent the governance of the universe. There may in our minds be other thoughts, even certainties, with which we have no quarrel; but these should scarcely be allowed to affect the consideration as to the combinations by which life was originally produced and as to how that life was moulded to give the varied series of organisms we find to-day. It is infinitely more difficult to imagine the production of living matter with its functional reactions to the world around it, than to consider if it evolved afterwards, and the driving forces which caused this evolution. Conversely, if evolution to produce the present organic world be proved, utilizing only natural forces, there is a strong presumption that such forces gave rise to life.

It is with thoughts such as these, here imagined for Dr. Morley Davies, that a start is made on an attempt to prove the adequacy of the evolution theory to explain the diversities of the organic world. In this there is never dullness, for there is originality in both treatment and thought. A good instance is in the chapter devoted to the palaeontological record, wherein is patiently explained the exact position in respect to the remains of the organisms of past ages, the impossibility that they shall at present provide any record approaching that completeness for which the student so frequently inquires. Instead of a hypothetical discussion, the author takes Mr. Douglas Dewar's 'Difficulties of the Evolution Theory' in place of a young student's questions, this reinforced by the late G. K. Chesterton's journalism. The student proceeds on his appointed courses from the simple to the complex, but Mr. Dewar apparently has reversed, birds having been his love. We wonder whether he understands the basal phenomena of

living matter and the essential functioning of every part of an animal's body with its environment. Quotations from his book in Dr. Davies's chapter on "Reptiles and Birds" suggest this question and he certainly does not understand an animal's fate after death, almost a miracle if its body does not provide nutriment on which the next generation grows. In this connexion a search in the writer's garden produced several hundred clay pipes, but associated with them no recognizable bones other than those of the ox—this he can readily understand, for his dogs allow no other mammalian remains to be recognizable for long. Then too these varied quotations suggest to us that Mr. Dewar considers evolution to have been an infinitely slow process, whereas modern research, especially cytological, suggests a speed in changes which would only by rare accident allow of the preservation of intermediate stages in fossil form. Dr. Davies can scarcely allow Mr. Dewar's idea "of evolution within the family but not beyond it", since there is no understanding among systematists as to the practical definition of "family"; the unit in evolution is the individual, and, if it can change, the question of genera, families and even phyla scarcely needs discussion.

We are always interested in W. R. Thompson's thoughts here quoted; to us he seems to be rather unnecessarily dragged in here. It is otherwise with Sir Ambrose Fleming, of high distinction in the domain of electrical engineering, who in what is in many ways a mischievous lecture dealt with a subject with which he was unfamiliar. He wrote of "Darwinian evolution" requiring a high birth-rate and a low death-rate whereas it requires "a high but selective death-rate". Then there followed Sir Ambrose's attack on the validity of palaeontological evidence in respect to man, for which little is claimed—pathetic because there is so little understanding as to what is evidence in scientific and in historical research. The reply here is adequate—and we recommend this little book as likely to be useful to the public as well as to professional teachers and students of science.

J. S. G.