

MENTAL EVOLUTION IN ANIMALS. By George John Romanes, M.A., LL.D., F.R.S., Zoological Secretary of the Linnean Society. With a Posthumous "Essay on Instinct," by Charles Darwin. London: Kegan Paul, Trench, & Co.

This volume forms the second part, under the original plan, of Mr Romanes' work on "Animal Intelligence," published in the International Scientific Series." It applies the facts collected there to the Theory of Descent in Animals; yet another volume is promised by the author dealing with Mental Evolution in Man. The theory of evolution on which the work is based is that of Mr Darwin, in which natural selection plays the chief part. The fact of organic evolution is assumed, and with that the implied fact of mental evolution; only the manner or history of development is now open for discussion.

In such a work a point of chief importance is the definition of mind, and the author has been at pains to find at least a criterion of the presence of mind as opposed to reflex action. This criterion is found in what is broadly named choice, or the power of making new adjustments for individual experience. On the physiological side the criterion is "the power of discriminating between stimuli, irrespective of their relative mechanical intensities."

Passing over the dark regions where the simple movements of protoplasm grow into nervous adjustments, in the organisms of unknown and extinct animals, the author takes up the genesis of consciousness, which he places in the Coelenterata. To the same place is assigned the rise of sensation, with the development of special sense organs. In the following chapter we have a discussion of pleasures and pains in their development, and in their bearing on natural selection; here also memory is treated from its first appearance in the limpet returning to its groove in a rock to its highest stage in recollection proper. Other chapters are devoted to perception and imagination, and thereafter the main part of the space is taken up with a full and able discussion of instinct, which is defined as "Reflex action, into which there is imported the element of consciousness." The treatment is here thorough, as the author shows how instincts may arise through natural selection alone, or by an originally intelligent action becoming automatic, or finally through both those means combined.

The author defends his theory of instinct, especially dealing with that of Mr Spencer, and acknowledges candidly the many cases of useless and even adverse instincts, which as yet form a serious bar to any complete theory of instinct.

The two last chapters treat of reason and the emotions in animals; on the highest level are placed Anthropoid apes and dogs, and to these is ascribed a something called "indefinite morality," which will be explained in M. Romanes' next work.

The exposition of the subject is aided by an elaborate diagram, confessedly arbitrary to a great extent, but on the whole reliable.

The posthumous essay of Mr Darwin is an unprinted chapter of the "Origin of Species," and with the extracts from his MSS., woven into Mr Romanes' text, forms the whole of his hitherto unpublished matter on the subject of Psychology.