

## WHAT IS INSTINCT?

*The Evolution of Animal Intelligence.* By Prof. S. J. Holmes. Pp. v+296. (New York: Henry Holt and Co., 1911.)

THE study of animal behaviour has two problems, description and interpretation. Both give opportunities for error. Thus on the one hand Binet's discussion of the mental life of Protozoa is largely based on a mistaken view of the facts. Didinium does not "hunt" its prey or "cast darts" at it. On the other hand Thorndike, on the basis of his well-known experiments, argued that his animals showed no high degree of intelligence because there was no sudden drop in their learning curves; Hobhouse opposed this conclusion on the ground that the curves did show a sharp drop. But in a recent article comparing human adults, children, and rats in learning a maze, Prof. Hicks finds that "the relation between the abruptness of slope and the degree of rational ability is just the inverse of that assumed by Thorndike and Hobhouse."

As this example suggests, problems of interpretation lead inevitably to questions of human psychology. Now we know considerably less about human methods than the old naïve anthropomorphism assumed. Nevertheless, the work already done by general psychology upon many of the problems of interpretation occurring in animal psychology cannot profitably be ignored. The failure to recognise this fully somewhat detracts from the value of Mr. Holmes's discussion of that central problem, the nature of instinct. His treatment seems to imply that the distinction between reflex action and instinct is merely one of degree or complexity.

Spencer's view is, of course, one for which many arguments may be found, but, in any attempt to discuss the matter at all fully, it should surely be made clear that a very different opinion has been taken by most of those approaching the question from the psychological, rather than the biological, viewpoint—the opinion, namely, that instinct is essentially conscious, involving elements of striving, feeling and cognition. Curiously, Mr. Holmes quotes with approval a well-known passage from James which insists on the essential kinship of animal instincts with human impulses, without apparently seeing how incompatible this conception is with any attempt to define instinct in terms of mere movement. Certainly, unless all interpretation is delusive, it seems clear that in many cases consciousness is necessarily involved. A bird building a nest or feeding its young is not merely executing a series of movements which happen to produce a given result.

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On different occasions this result remains the same while the exact movements and their order are continually varying; that is, the result is not merely an effect but also a cause: we have not merely movement but action.

In discussing puzzle-box tests of intelligence Mr. Holmes rightly agrees with Prof. Hobhouse that the frequent variation of method in lifting the latch, &c. (*e.g.*, using either paw), is conclusive against attributing everything to sensori-motor association. But the same argument seems decisive against regarding instinct as a complex of reflexes. Its framework is fixed; the gaps, however small, have to be varyingly filled in by conative and intellectual processes of at least the perceptual level.

Into the relation of instinct to intelligence it is impossible to enter. The use of intelligence as equivalent to the power to form associations may be justified if one means merely that which is opposed to instinct, but it fails to find any place for that perception of relations which is to be found selecting means to ends whether given by congenital or experiential orientation.

If Mr. Holmes's discussion of central theoretical questions is not altogether satisfying, his book is extremely interesting if only because of the amount of concrete illustration. It is unfortunate that a number of slipshod phrases has been allowed to pass.

## OUR BOOKSHELF.

*Their Winged Destiny, being a Tale of Two Planets.* By Donald W. Horner. Pp. 240. (London: Simpkin, Marshall and Co., Ltd.) Price 2s. net.

THERE are about one hundred million suns in space; and it is reasonable to suppose that many of them have planets revolving round them similar to those which form our own solar system. Whether life exists upon any of these bodies is a matter of legitimate speculation. It is, perhaps, possible that among so many bodies there is one which has gone through precisely the same stages of development as the earth, and upon which the same forms of life are in being. This hypothesis provides Mr. Horner with the basis of his fantastic romance.

As in Mr. Wells's impressive story of "The Star," a new star appears and threatens to destroy the earth. To avoid the calamity, a party leaves the earth in an "Electronship," which can travel with the velocity of light, and after four years arrives at the system of  $\alpha$  Centauri, where black and white giants were at war on one planet, while another was found to be exactly like the earth, not only as regards the distribution of land and water, but also in its inhabitants, who spoke the same languages as the peoples of our globe. Slight differences of mechanical and social development