

solved, or even palliated, till we have worked through, not merely the epistemological 'inhibitions,' as one might term them, but also through the physiological and psychological facts in detail. It were much to be desired that a master like Dr. Ward, equipped, not merely with the requisite knowledge, but with a peculiar detachment, insight and cool acuteness, should return to this problem in its most recent phases. I, for one, must hold that, till some thorough treatment be forthcoming, monistic construction cannot avoid the pitfalls of otiose acquiescence. And it is by no means certain that the 'Spiritualistic Monism,' offered by Dr. Ward as his final solution, is free entirely from this very limitation.

Yet, whatever may be said in the way of criticism, one would fall short of his duty did he fail to remind readers that, taken as a whole, these Gifford Lectures must be classed with the most important British contributions to philosophy in recent years—with Green's 'Prolegomena to Ethics,' E. Caird's 'Kant,' F. H. Bradley's 'Appearance and Reality.' True, the office of these last is different, and their initial audience was not of the same character. Nevertheless, in what Dr. Ward implies, more perhaps than in what he actually states, he deserves the closest attention of philosophical students, more especially of those who hold, like the present writer, that the immediate future of philosophy depends on the manner in which it reckons with the positive sciences.

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Animal Behaviour. By C. LLOYD MORGAN, F.R.S. Illustrated. London, Edward Arnold. 1900.

The author set out with the purpose of preparing a new edition of his 'Animal Life and Intelligence,' but concluded, and all will agree wisely, to write a new book, into which very little material from the above or his other works has been introduced.

The chapters on organic behavior of plants and animals, with pictorial illustrations, are written in order to show among other things that while there is beautiful adaptation effective to a definite biological end, there is an absence of a guiding consciousness. Among plants there is no evidence of profiting by experience. After a glance at reflex action the discussion of the evolution of organic behavior is considered. To the question, Are acquired modes of behavior inherited? a negative answer is provisionally given, though it is admitted

that if this be not the case 'the method of natural selection in racial progress is curiously indirect.'

Natural selection develops congenital definiteness of response and such innate plasticity as is of advantage under the conditions of existence, uniform conditions tending to emphasize the former, variable conditions the latter.

Professor Morgan concludes that a belief in an accompanying consciousness in the organic behavior of animals is wise, since the associations which take part in the guidance of behavior are so varied and delicate that a skeptical attitude is a greater strain than is a belief in conscious control. And if his remark were extended it would explain very well the attitude of some who are disposed to be somewhat more conservative in regard to many points in animal behavior than Professor Morgan and those of his way of thinking.

Speaking of the explanation of the behavior of a chick, after some experience, the author well says: "Sentience is not sufficient for guidance; there must be consentience involving the presence of several elements; they form constituent parts of the coalescent situation as a whole, of which alone the chick is personally conscious, without analysis of detail," though it is felt that the manner in which consciousness affects behavior is far from clear.

Briefly, consciousness in the first stage of development may be regarded as an accompaniment, in the second as a guide, and in the third as a judge. The latter must of course not be attributed to animals—it is characteristic of man alone.

Instinctive behavior is treated at considerable length. Mr. Marshall's views are subjected to a critical examination, with the general result that while Professor Morgan agrees that instinctive acts tend to the well-being of the individual and the preservation of the species he does not hold that the biological end is the objective mark of an instinct. On the other hand approval is expressed of Dr. Peckham's definition of instinctive behavior: "All complex acts which are performed previous to experience, and *in a similar manner by all members of the same sex and race.*"

Professor Morgan himself would define instinctive behavior as "comprising those complex groups of coördinated acts which are, on their first occurrence, independent of experience; which tend to the well-being of the individual and the preservation of the race; which are due to the coöperation of external and internal stimuli; which are similarly performed by all the members of the same more or less restricted group of animals; but which are subject to variation, and

to subsequent modification under the guidance of experience." Most readers will agree that this leaves little if anything to be desired as a general statement of the case.

Then follows an examination of the subject as it is illustrated by insects and birds.

The characteristics of instinctive behavior in birds are the following:

1. That which is inherited is essentially a motor response or train of such responses. The compound reflex action of Herbert Spencer.
2. These often show very accurate and nicely-adjusted hereditary coordinations.
3. They are evoked by stimuli, the general type of which is fairly definite, and may in some cases be in response to particular objects.
4. They are also generally shown under conditions which lead us to infer the presence of an internal factor, emotional or other.
5. There does not seem to be any evidence of inherited knowledge or experience.

While there is probably in all cases present some internal prompting, it is not equally clear whether a definite external stimulus is invariably necessary. If the latter is indispensable, the reviewer can testify that in some instances 'definite' must be given a very liberal meaning, if not replaced by another term. A very small spark indeed in some cases—if spark at all—is required for the combustion which sometimes seems to be all but spontaneous.

The author does not look with favor on the term 'acquired instincts' of Wundt.

"How comes it, then, that the chick does not instinctively respond by appropriate behavior to the sight of water?" asks the author. Some of us would question this. We hold that the chick does respond to the sight of water under the conditions of its normal existence and frequently under the more or less unnatural conditions we substitute. It is merely a case of a less certain or more tardy response than that to food, so that arguments founded on this supposed fact must carry little weight, whether applied to heredity or other problems.

While frankly admitting that a perfectly satisfactory explanation of intelligent behavior cannot be given at present, Professor Morgan thinks that "from all parts of the automatically working organic machine messages come in to the center of conscious control, and that in accordance with the net result of all these messages, past and present, tinged with pleasure or pain, other messages go out to the

automatic centers, and by checking their action here and enforcing it there, give new direction to resulting behavior."

The physiologists and neurologists at all events will approve of this view of the case, and probably the psychologists equally. When, however, the author goes so far as to say, in comparing intelligent and instinctive behavior, that "in performing the instinctive act, the animal seems to have no more individuality or originality than a piece of adequately wound clockwork," we must dissent. This is far too strongly put for the instincts of the higher animals at least.

Professor Morgan makes generous use of the valuable researches of the Peckhams. Speaking of certain behavior of the wasp, he says: "Here we have intelligent behavior rising to a level to which some would apply the term rational. For the act may be held to afford evidence of the perception of the relation of the means employed to an end to be attained, and some general conception of purpose."

The author thinks that the question as to whether animal intelligence attains to the 'rational' is more likely to be answered through experiment than by chance observations.

We would say both by experiments and by *carefully made observations*, of which the latter would likely prove the more important, as being more likely to find the animal under natural conditions.

Professor Morgan seems to have based his conclusions in regard to the intelligence of animals, especially dogs, on some observations or experiments with one or two dogs he possessed. He lays great stress on several failures of his fox terrier to get a stick through a fence. Would a well-trained retriever, collie or poodle have had a like difficulty—although their experience had not been in the direction referred to in this case? The reviewer's study of many breeds of dogs leads him to take a much higher view of their intelligence than Professor Morgan seems to believe justifiable. His experience with throwing a ball has been very instructive. In this he has generally tried experiments, sometimes at the same time, with a half dozen dogs of dissimilar breeds. They behaved very differently—perhaps more so than the same number of small boys would have done. The St. Bernard showed a great deal the most of what one might call 'gumption.' He took in the situation by far the best, and adapted to it in a surprising way, while the terriers were altogether more machine-like.

Dr. Thorndike's experiments are reviewed and criticised somewhat unfavorably, though Professor Morgan in many of his positions on the subject of animal intelligence does not differ greatly from Dr.

Thorndike. Says the author, commenting on the behavior of his dog in lifting the latch of the gate: "He did it with the back of his head. I could not get him to do it (more gracefully) with his muzzle." And why should he, seeing that the muzzle is a very sensitive part in dogs?

The author holds that "it may be said that between the method of intelligence and that of fully developed rational procedure there is a wide gap which must have been bridged over in the course of mental evolution. Unquestionably, and in contending that the methods of the animal are predominantly intelligent, I am far from wishing to assert dogmatically that in no animals are there even the beginnings of a rational scheme. * * * We shall probably have to await the further results which must be the outcome of patient and well-directed child-study."

Naturally the reviewer read the above with hopeful satisfaction. With Professor Morgan the case against rational behavior is, at least, not yet closed.

It is believed that growth in intelligence takes place by what the author designates as 'condensation of experience by an elimination of detail and the survival of essential features'—also by the elimination of those modes of behavior which were not efficacious, *i. e.*, by the functional selection of Baldwin. According to this view an animal may come very near to the attainment of the abstract without quite reaching it.

With the development of the higher intelligence instincts decay, which possibly explains why man has so few 'stereotyped instincts'; nevertheless residua remain, which explains much.

Under 'Imitation' Baldwin's 'circular process' is discussed and its truth admitted with certain important reservations; but Professor Morgan does not favor on the whole the extended usage of the term that Baldwin would advocate.

On the other hand the author cannot endorse Dr. Thorndike in his extreme position on the subject of imitation, although he does not apparently believe in 'reflective imitation,' though 'intelligent imitation' is conceived to be of great importance, as also 'instinctive imitation.' In ants, difference in behavior is thought to give rise to suggestive effects on the other members of the community, rather than that their conduct is dependent on communication by any definite system of signs; nor does the author believe that dogs understand words in the proper sense of the term.

While in general Professor Morgan is not convinced that animals reason, he is not prepared to assert dogmatically that they do not, for

he says: " Presumably in the ant, rook, and beaver anything like an ideal scheme of thought based on reflection, if it exist, is as yet exceedingly indefinite."

Under ' Play and Courtship ' the views of Professor Groos are considered, and the author would have the former attach more importance to courtship in generating and strengthening the ardor of the male. Nor would Professor Morgan think it necessary to introduce ' anything so psychologically complex as the conscious illusion of make-believe ' in order to explain certain forms of mock combat, etc. He would differ from those who hold that play is always the outcome of a surplus of energy. He instances the case of a sick kitten attempting to play as evidence to the contrary.

The infrequency with which the term ' association of ideas,' apparently used by many to cover psychological ignorance. occurs in this work is noteworthy.

One lays down this volume with the feeling that it is a psychological and literary production of an unusually high order.

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