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JOURNAL OF
THE TRANSACTIONS
OF
The Victoria Institute,
OR
Philosophical Society of Great Britain.

EDITED BY THE HONORARY SECRETARY.

VOL. V.



LONDON:
(Published for the Institute)
ROBERT HARDWICKE, 192, PICCADILLY.
1871.

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ORDINARY MEETING, 2nd MAY, 1870.

THE REV. R. THORNTON, D.D., VICE-PRESIDENT, IN THE
CHAIR.

The Minutes of the last Meeting were read and confirmed.

The following elections were announced :—

MEMBER :—R. R. Newman, Esq., 53, Upper Bedford-place.

ASSOCIATES, 2ND CLASS :—Rev. F. Williams, B.A., Saltley Vicarage ;
W. J. Harris, Esq., Worthing.

The Secretary, in the absence of the Author, then read the following paper :—

ON COMPARATIVE PSYCHOLOGY. By E. J. MORSHEAD,
Esq., H.M.C.S., Hon. For. Sec. Vict. Inst.

IN a former paper (read before the members of this Institute on the 2nd of March, 1868) I attempted to show that the difference between the human psychology and the brute psychology was a difference not of degree, but of kind. I took the following position with reference to this difference—that, while man possesses both instinct and reason, the brute possesses instinct alone. I now purpose making a few further remarks on the subject of instinct.

2. Instinct is, in the original sense of the term, a *natural impulse*. The usual meaning attached to it is, as I consider, rather too limited. We usually call those actions which cannot, so far as we know, proceed from a foreknowledge of their probable consequences, *instinctive actions*; but when an animal may be reasonably supposed to be aware from experience whether an action is likely to prove beneficial or prejudicial to itself, we remove the action from the category of instinctive actions, and attribute it to a rational motive. It is necessary, therefore, in order to avoid misconception, that we should closely adhere to the foregoing definition of instinct; and that we should bear in mind that the term is properly applicable to the impulse

alone, and not to the knowledge which precedes the impulse. If, for example, I, as a rational being, experience an inclination to perform a certain action in consequence of a chain of reasoning by which I have demonstrated to myself the advisability of the action, the reasoning process should be carefully discriminated from the inclination. The reasoning is intellectual, but the inclination is instinctive. Under the head of instinct, then, I include all impulses whatsoever, whether they are common to the whole animal creation or peculiar to certain species; whether they are dependent on a condition of the body or excited by the circumstances with which the animal, rational or irrational, is brought into contact. The difficulty, however, does not lie in distinguishing between the inclination and the reasoning process; but in accounting for the fact of the inclination being excited without a previous mental operation. There can be no doubt but that brutes are endowed with a quality to which, for want of a better epithet, I have affixed the term "natural sagacity,"—a quality by virtue of which my cat, when I drive it from the room, makes for the door, and does not rush blindly against the wall.

3. In proceeding to consider the nature of instinct in the lower animals we encounter at the outset a most remarkable phenomenon, viz., that they perform actions in cases where it is manifestly impossible that they could have learnt the desirability of such actions by any process of ratiocination. We must, however complex this phenomenon may be, accept it as an ultimate fact, any closer analysis of which is entirely speculative. I may assume, without much danger of contradiction, that by far the greater number of the actions of a brute are clearly assignable to an internal impulse; or rather, to express myself more accurately, that they are simply reflex actions produced by the circumstances in which the animal is placed, and by which his instincts are called into play. The question at issue is, whether the whole of his actions do not proceed from the same source.

4. It is evident that in estimating the psychological value of those actions which are peculiar to given species of animals, and which undoubtedly proceed from *blind* instinct; that is to say, those actions whose necessity cannot have been impressed upon the animal by his experience, we should not attribute to them the same amount of intelligence and fore-thought which they would indicate if they were performed by a human being. The cell of the bee is constructed on principles which combine the greatest amount of space with the smallest expenditure of wax, and a human being could only arrive at a knowledge of these principles by means of an

elaborate mathematical calculation, which is a purely intellectual operation. But we do not consider the bee one whit more intelligent than the wasp, who constructs his cell on less scientific principles; because we know that they both act from an internal impulse, that the intelligence displayed is not their own intelligence, and that their actions are not the result of their own reasoning. Nor when we find the bees covering the body of a slug with wax are we driven from the province of instinct. We see in this action the awakening of a dormant instinct, which does not manifest itself until it is required. I cite these common instances in order to narrow the field of debate, and to restrict it to those cases in which the animal acts in accordance with acquired knowledge.

5. The instinct supplies the animal with certain general principles of action. It teaches him how to construct his nest, or his cell; it shows him how to procure his food, and to rear his young; and, so far as their more necessary and indispensable wants are concerned, we find all animals of the same species acting with undeviating uniformity. But he is frequently placed in circumstances which his instinctive knowledge does not enable him to deal with; and, evidently in order that he may adapt himself to new conditions, the sphere of his knowledge is capable of being considerably extended by the aid of memory; and it is this use of memory which has given rise to the notion that the brute is possessed of intelligence. We rashly apply to the lower animals the test of an analogy drawn from our own consciousness; and because we find ourselves consciously regulating our conduct by past experience, we are liable to infer that the animal does the same. Yet, if we studied the phenomena of our own psychology more attentively, we should find ourselves continually acting in accordance with *impressions*; which have been stored up by the memory, and which produce actions entirely automatic. A person who has been injured, for instance, by a cow or a horse, will probably feel an instinctive terror at the appearance of one of these animals, although his reason may show him that they are rarely dangerous, and it is not unfrequently the case that, while perfectly aware of the groundlessness of his fear, he is totally unable to overcome it. The memory is not in itself an intellectual quality; it retains sensations and impressions as well as ideas; and not only is this so, but the impressions unconsciously retained by the memory are capable of awakening in us the instincts of fear, anger, &c., and of producing without any exercise of the reasoning faculty, actions conducive to our own safety. I do not

say that we *never* reason in such cases, but merely that we often act, without reasoning, from an impulse caused by the association of impressions ; and this fact is quite sufficient to establish the principle. Of course, when I afterwards come to analyze, at my leisure, the psychological process which has resulted in my running away from a cow, I may attribute my action to the circumstance of my having been tossed by a cow at some former period of my existence ; and the process may seem to me to be a rational one : the fact that I reason on the matter subsequently may beget the idea that I reasoned at the time ; whereas at the time in question it is quite possible that I had no conscious recollection of the former occurrence.

6. For when any object is retained by the memory, the feelings which it inspired when it was first presented to the consciousness are retained together with it ; and when it is reproduced, those feelings are reproduced also, except in as far as they are modified by particular circumstances. And this action of the memory is quite independent of reason ; for, although we are able, as an act of volition, to direct our attention to circumstances of our past lives, we can only do so when those circumstances have been already impressed upon and retained by the memory spontaneously. And with respect to circumstances which we have forgotten, we are compelled, if we wish to recall them, to direct our attention to concomitant circumstances which we have *not* forgotten, and to evoke them from oblivion by means of *association*, which is a prominent characteristic of the memory, and which is by no means under the direct control of the rational will ; in short, we must humour the memory, but we cannot command it. And if we wish to impress any fact upon our memories, we are obliged, unless the fact is of such a nature as to impress itself upon us involuntarily, to have recourse to artificial methods adapted to our individual peculiarities. Memory is, of course, indispensable to an exercise of the intellectual faculties, and, *cæteris paribus*, the man who has a good memory is obviously superior in intellectual power to the man who has a bad one. But memory is quite as indispensable to the unintelligent brute ; and—if I may be permitted to assume such a contingency for the purpose of illustration—the annihilation of this important faculty in the animal kingdom would be as disastrous in its effects as the suspension of the law of gravitation in the natural world. Were it not for memory, the bird would forget his way back to his nest, or that he had a nest at all ; the animal flying from a pursuer would forget directly he turned his head forwards that there was any necessity for continuing his

flight. But, while memory is not an intellectual faculty, it is on the other hand intimately connected with instinct; and if any proof were required in support of this assertion, it might be found in the fact, which is palpable to every one who has considered the matter at all, that those objects or actions which interest our feelings (or instincts) are more vividly impressed on, and more permanently retained by, the memory, than those which have occupied the intellectual faculties alone.

7. In the lower animals we find the same principle—of the production of actions by an association of impressions. If I thrash my dog every time I wear a scarlet coat, the dog will, after a time, make a point of avoiding me whenever he sees me with the scarlet coat on. There need be no reasoning in the dog's mind at all; he instinctively associates my costume with a sensation disagreeable to himself, and he gets out of the way accordingly. In the discussion on my former paper, Professor Macdonald, arguing on behalf of the intelligence of brutes, cited the instance of his brother-in-law's dogs, who would always go out with him on a week-day, but who never offered to accompany him on Sunday. And why? Because the dogs had learnt by experience that Professor Macdonald's brother-in-law, with his Sunday coat and prayer-book, was a very different personage from Professor Macdonald's brother-in-law with his shooting-jacket and gun. There is, perhaps, no animal whose actions are more difficult to explain psychologically than a dog's: and the reason of this seems to me to be that, whereas brutes can only be influenced through their instincts, we possess in the extraordinary attachment of the dog towards his master an additional means by which we can work upon him. If we could get other animals to pay attention to us, we might teach them as much as we do the dog. The most (apparently) rational actions of a dog proceed from his affection; and no one will deny that both affection and fear are purely instinctive. The numerous instances upon record in which a dog has called assistance to his master when in danger, are as little indicative of reason as the sagacity displayed by an animal in securing its prey or defending itself from its enemies.

8. If, then, we admit—as we cannot well avoid doing—the function of memory in causing actions without the intervention of an intellectual process, there is very little space left in the brute psychology between sensual perception and the innate tendency to act. It is to this intermediate ground that I assigned (in my former paper) the phrase “natural sagacity.” It is inconsistent with our ideas of an intelligent Creator to

suppose that he would have constructed beings endowed with the power of voluntary locomotion, without at the same time providing them with some sort of safeguard against the dangers which they must necessarily encounter. The brute has a certain amount of judgment and a certain amount of knowledge, either born with him or acquired by experience; and, because a human being has both judgment and knowledge, there may appear to be intellectual qualities common to the human being and the brute. But there is a vast difference in function between the quality which is always subordinate to the instinct, and the quality which is capable of acting in opposition to it. In the brute the instinct is *always* the motive power: in man it is not always so.

9. The remarks which I have made above as to the spontaneous nature of the operations of memory apply equally to the other psychological faculties (I use the word "psychological" here in order to avoid the term "mental," as applied to brutes). We are so accustomed to regard the powers of judgment and abstraction as intellectual faculties, that we are apt to forget that they operate independently of the intellect; or, if we *do* admit their existence in the lower animals, we cite them as proofs that the lower animals are capable of reasoning. Nevertheless, these faculties are almost mechanical in their mode of operation. The *judgment* (understanding the term in a modified sense) of the brute is easily resolvable into a balance of inclinations; for, whenever two or more courses of action are suggested to him, he adopts the one which his inclinations, guided by his innate knowledge or his acquired impressions, prompt him to adopt; and if his inclinations drag him with equal force in different directions, his action is suspended until the balance is destroyed. This phenomenon is of so frequent occurrence that it may appear almost superfluous to mention a case in point. Many years ago I was walking with a friend, accompanied by a female spaniel of considerable sagacity. Several miles from home we parted company, and walked in opposite directions—the dog being out of sight at the time. When we were some hundred yards distant from each other I heard my friend calling the dog, and looking back I saw the dog standing in the road about half-way between us. I immediately called the dog, and my friend continued to do the same. The dog looked at me and then at my friend; first it ran a few yards towards one of us, then it turned and ran a few yards towards the other. In this condition of suspense it remained for nearly half an hour, until—probably in consequence of my using measures of intimidation—the balance of inclination preponderated in favour of my

friend. Now, if the animal had retired to the road-side and placed its head between its paws, it would perhaps have been difficult to show that it was not employed in forming a rational judgment; but as the case stood, the dog's demeanour evidenced nothing more than a balance of desires. And whenever an animal appears to hesitate as to what it shall do, we may always find this principle at the bottom of its hesitation.

10. This state of equilibrium is very different from intellectual judgment—or rather from the state of inaction which precedes and is necessary to the formation of an intellectual judgment. A human being may find himself in precisely the same condition as that which I have just mentioned, and his course of action may be finally decided, as in the case of the brute, by a destruction of the equilibrium; and, so far, he merely acts under the influence of his instinct. But when he proceeds to form an *intellectual* judgment, his mode of operation is different. He places his mind by an act of the rational will in a condition of suspense; so far from being led by his inclinations, he voluntarily withdraws his attention from those objects which are likely to influence his desires, in order that his intellect may work freely. He refuses to be governed by the accumulated impressions, stored up and spontaneously presented to him by his memory; on the contrary, he searches his memory for fresh data, or consults the opinions of others. The difference then between the human being and the brute, so far as regards the faculty of judgment, consists in this, that the action of the brute is determined by the facts which are present to his consciousness at the time of the action, whereas the human being, although placed in contact with the same facts, has the power of suspending his action, and directing his mind in quest of fresh facts by which his conduct may be regulated; and it does not militate against this distinction that the power is not always exercised.

11. Again, abstraction and generalization only become intellectual when they are utilized by the intellect. A bull is irritated by a red colour, and not by the object of which redness is a property; but it would be absurd to say that the bull voluntarily abstracts the phenomenon of redness from these objects. The process is essentially one of abstraction, and yet at the same time it is entirely automatic.

12. Or, coming to generalization, let us suppose a mouse encountering a cat for the first time in his life; and let us further suppose that he is not afraid of cats, in consequence of his ignorance of their habits. But, being injured or intimidated by the cat, he takes care, if he is lucky enough

to escape, to avoid cats for the future ; and this phenomenon is accounted for by the principle of the association of impressions, so far as concerns that particular cat. But if his experience of cats is to be of any use to him, it is necessary that he should avoid *other* cats also ; and, in fact, we shall find that his fear is not confined to the individual cat in question, but is extended to the whole species ; that is, he has generalized from a single instance. On his second encounter with a cat he may be conceived to reason syllogistically, and to argue from his general rule to a particular instance. "Cats have to be avoided : this is a cat ; therefore it has to be avoided."

13. Thus the brute abstracts and generalizes and reasons syllogistically, but he is unconscious of doing so. His psychological machinery works in the same way as that of a human being, but he cannot control its workings. Certain qualities of an object engage his attention to the exclusion of other qualities, which are disregarded ; and thus he *abstracts*, automatically. The image of an object having been imprinted on his memory, the feelings which it excited are also imprinted on his memory, and on the reproduction of the image these feelings and the actions resulting therefrom are reproduced likewise : thus he *acts from experience*, automatically still. The image may be the image of the same object, or the image of another object of the same species, but the effect is the same, and thus he *generalizes*, automatically also. And, as to syllogistic reasoning, the explanation is very simple, viz., that when philosophers came to examine the nature of the human mind they found that in forming conclusions it operated after a particular method ; they defined this method and called it a syllogism. But this method is nevertheless common to man and brute, and, like the faculties of abstraction, &c., it only becomes *intellectual* when we choose to make it so.

14. It may be asked why, in cases where the human being acts from reason, may we not assume that the lower animals do the same ? Why do we deny to the brute the power of reasoning, when from his previous experience he may be supposed to know the nature and object of his actions ? We may answer this question by another. Why *should* we assume that he reasons ? We find the brute gifted from his birth with a tendency to act in a particular manner under particular circumstances ; we find this tendency inherent in his organization, inasmuch as the inclination to act in a similar manner is common to all animals similarly organized,—in other words, to all animals of the same species. We find that the obvious, and I think I may say, exclusive, object of these inclinations

is to preserve himself and to propagate his species ; and the animal, so far as he himself and his species are concerned, does nothing else. He does not either improve or deteriorate psychologically ; he is in precisely the same condition now that he was in hundreds of years ago. We find that his instincts are capable of being called into action by the association of impressions which I have mentioned above, and we find that he is thereby enabled to act in conformity with circumstances for which he was not originally provided. Why, then, should we invest him with reason, for which he has no use, which is inferior to instinct as a means to the only object he ever carries out ?—for even *we* often find that in moments of peril, when our intellectual faculties are paralyzed, it is instinct that comes to the rescue. The brute has now and then an internal conflict as to what he shall do or shall not do, but it is not a conflict between reason and desire : it is a conflict between one desire and another. He may avoid an action because a similar action has been in a former case attended with painful consequences ; or, again, he may perform an action because it has previously proved beneficial to him. But he gives no indication that he has any comprehension of abstract good or evil : he is guided entirely by his inclination, and there is no moral standard, however low, by which we can judge him. The remark which I have seen somewhere that the dog stands in the same relation to his master as his master does to God, is valueless, until it can be shown that the immediate hope of reward and the immediate fear of punishment are the sole inducements to virtue. The animal is, in fact, an automaton, but he is an automaton of Divine construction. He has sensations and desires, but these are simply the wires by which he is worked, and without which he would speedily become extinct. He has memory, but his memory does not retain ideas ; for, in the higher sense of the term, he has none. He has, by means of his memory, associations of impressions, but these associations, by awakening his instincts, regulate his conduct automatically.

15. I cannot close these remarks without adverting to an assertion which we commonly meet with, that the theory of a mental distinction between man and brute is grounded on jealousy. It appears to me to be highly probable that the opposite theory is equally unscientific in its origin. At all events, this seems to be Lord Brougham's view.* He says :—

"The sceptical or free-thinking philosophers always lowered human nature as much as possible. They regarded it as something gained to their argu-

* " Dialogues on Instinct."

ments against religious belief, if they could show the difference to be slighter than is supposed between men and brutes, and that there is a chain of being from the plant, nay almost from inorganic matter, up to man. They seem to have had a confused idea that this helped them even to account for the constitution of the universe ‘without the hypothesis of a Deity,’ as Laplace is said to have termed it when Napoleon questioned him on the remarkable omission in the ‘*Mécanique Céleste*.’ Thus much is certain in point of fact, that those philosophers, and especially the French school, were fond of lowering the human intellect by raising that of the animals ; and while the priests were lavish of their admission that our moral nature is utterly corrupt but claimed for our intellectual capacity to be only a little lower than the angels, the society of the *Encyclopédie* and the coterie of Baron d’Holbach were fond of levelling the intellectual distinction between immortal and confessedly mortal beings, though they denied the moral depravity of their race with perhaps no very strict regard either to the evidence of their consciousness or of their observation.”

The CHAIRMAN.—I suppose I may take it for granted that the thanks of the Society are to be returned to the author of this paper. I cannot say that, however, without adding that I think we must stigmatize the paper as being too brief. I shall now be happy to hear any remarks which any of our members or visitors may wish to make upon the subject.

Rev. C. A. Row.—I have no wish to dispute the general position laid down in this paper, that there is a vast distinction between the intelligence of man and of the brute creation. That is the last thing that I should dispute, but I think there is a great want of satisfactory proof of that distinction adduced in the paper, while there are several assumptions in which I am unable to acquiesce. The author of the paper takes for granted the existence of something which he calls natural sagacity ; but he has not told us what it is. For aught I know, it may include a large share of what I call reason, and therefore we are in a difficulty when we come to discuss the matter. Then I would call attention to the latter part of the paper, where there appears to me to be a want of accuracy of definition. The author has used the words “reason,” “reasoning,” and “intelligence,” and several other terms of that description, as though they meant the same thing ; but I think there is a vast distinction between reason and reasoning—between the noun and the verb. When I speak of reason, I mean something different from what I mean by argument. If I say, “I will argue this point,” I mean that I will argue it either deductively or inductively ; but when speaking of my reason, I therein include nearly the whole of my intellectual faculties. In this paper, the author views reason as though it had the same meaning as reasoning ; and in the latter part he asserts that the “animal is in fact an automaton.” Now if that theory is admitted, it goes a great deal further than I should like to go ; an automaton is a mere piece of mechanism without feeling and without natural sagacity. In his 14th paragraph Mr. Morshead says :—

"The animal is in fact an automaton, but he is an automaton of divine construction."

The term "automatic" is used with great liberality, and I am surprised to find things which I should call high intellectual operations, involving induction and other intellectual principles, designated here as being automatic; for I find such operations ranked in my books as very high intellectual operations. But it seems to me that one of the great errors in the paper is its great want of definition. Within what bounds is the natural sagacity of which the author speaks, limited? In the second section, however, the author speaks of his cat; but he has not dealt fairly with it. It rushes to the door when he drives it; but this only exhibits a small amount of sagacity. If I had a cat that, wanting to go out, "mewed" at me and scratched at the door until I opened it, I would not think it involved a very high act of reason on the animal's part, but something denoting the presence of mind. Now a dog would probably go a step beyond the cat; if unable to get out by making a noise, it would lick my hand, and thus draw attention to its wishes. That goes much beyond what the author lays down for natural sagacity, and I cannot understand operations of that kind, without ascribing to the animal a certain amount of mind. Its ideas are limited, but there is a certain analogy between its acts and my own. But then the author disputes my right to argue, because I see a cat drawing inferences like a being possessed of intellectuality, that I am entitled to infer that it denotes the presence of mind. If I cannot argue from myself to the animal, I cannot argue at all. The only ground I have to go upon is by judging what should I do under similar circumstances to those in which the animal is placed; unless I did that, it would be impossible to arrive at any theory with regard to the powers of the animal. I agree with Mr. Morshead in thinking that a very large portion of the acts of animals are instinctive, as he states in the fourth paragraph, when speaking of the bee, with whose habits I am well acquainted. Of course there can be no doubt that in the construction of its cell it is directed by a knowledge which is unquestionably not its own; but at the same time, when we admit this, it forms no reason for denying that the bee has a certain amount of knowledge of some kind; for I have seen that under certain circumstances they can, and do, modify their forms of architecture. Bees do not form their cells exactly parallel to one another. In taking up a hive of bees when the comb has not been perfectly formed, I have given it a shake, and one comb has fallen down. That forms a very serious obstacle to the bees in building, according to their usual principles; but if you have ever noticed an accident of this kind, you will find that bees are capable of modifying the whole of their architecture to meet such a difficulty. They have a sufficient degree of intelligence for that. Mr. Morshead seems to think that these animals are guided purely by instinct. No doubt they are guided by it in a very great degree. Now I will define what I mean by instinct. The only correct definition of instinct is that of an irresistibly strong feeling impelling a human being or an animal to a particular

kind of action. But I maintain that the bee is capable of modifying his actions within a very, and only a very, moderate space. Take an example : The general feeling of the common working bee towards the queen of the hive is instinctive. The queen is treated with the most profound respect by the other bees ; they feed her, and show her every feeling of deference ; but after the first swarming what takes place ? The old queen is the one which leaves the hive, and the new one does not come out until two or three days after the swarming. There are several other royal grubs in the royal cells, and the new queen immediately gets into an exceedingly agitated state, her purpose being to destroy the remaining royal grubs. But the other bees, who usually show her supreme deference, rebel when she goes to destroy the grubs. If you ever stood watching a hive before the second swarm issues from the hive, you will hear a peculiar noise made in the hive by the new queen in her attempts to destroy the royal grubs ; and the working bees then cease from all their other labours, and proceed to drive her away from the cells in question. This shows something in the bee which is a great modification of its usual instinctive feelings ; but, at the same time, I admit that even in the bee the instinct is not capable of any very large modification, even by the certain degree of mental power which it appears to possess. I further agree with Mr. Morshead that the larger portion of its acts are instinctive ; but it is a curious question whether all its actions are so. Before swarming from a hive, the bees will send out scouts to ascertain where they are to go to. In my own garden, we had in an open house a hive with a considerable quantity of combs. For several days I had observed many bees flying about a hive, which was about a quarter of a mile from their own, and at last a whole swarm came and took possession of it. They had sent out their scouts to see where they were to go, and those scouts must have conducted the queen to the new abode, for if she had not come, the other bees would not have followed.

Mr. J. REDDIE.—Will you explain how it is that you know that scouts are sent out by the bees ? How do you know they do not go out of themselves ?

Mr. Row.—I do not mean that they are sent out in that sense, but it is a fact that bees do examine a place to see where they are to go to ; and what is extraordinary to me is that they usually settle before they take possession of a place. They settle on a tree, and you then get them into another hive. Mr. Morshead has laid it down that a bee by a simple act of memory finds its way home. Now I dispute that position, especially from what I know of them. I cannot understand how a bee can find its way through the air by any act of memory. Take a strong case. If you buy a hive of bees, and take it home in the night, say a distance of two miles, the bees will find their way back to the hive next day without any difficulty. I think they must have a separate sense by which that is done ; only some 200 or 300 will go back to the old place, but you will find that the bulk of the bees will come to the new place as regularly as possible. And the idea that they can remember their way through the air so as to find a path home, I cannot agree with. Mr. Morshead, again, seems to think that the actions of the dog, to

whom he grants a certain amount of intelligence, are nearly automatic. But I cannot understand how a great many of the actions of the dog can be accounted for on the ground of instinct, for I suppose an instinctive action is one where a peculiar feeling takes place and produces an outward action of an inevitable character.

Mr. REDDIE.—How could you apply that definition to the making of a bee's cell?

Mr. Row.—The making of a bee's cell is an intelligent principle given to the animal by the Creator. I do not suppose the bee makes the cell by any act of its own intelligence; but the animal must have a feeling which prompts it to work in a particular manner, though at the same time I think the intelligence given by the Creator is capable of slight modification to suit the particular circumstances of the place where the bee is to build its comb. I have examined many hives, and seen great modifications of their architecture at different times. Any person who has examined hives knows that the architecture of the queen's cell differs from that of the common cells, and if the queen dies suddenly, and there are only the grubs of working bees of a certain age, the bees pull down the walls of several common cells, and change them into a royal cell. Surely this evidences a certain degree of modifying power beyond mere instinct. But we have a more sure mode of testing the matter by the intelligence of the dog, the elephant, and other animals. I have kept many dogs, and in a former discussion referred to one or two remarkable things that have occurred to myself with regard to the intelligence of dogs, and from which occurrences I infer that the dog is capable of intelligent action. My father lived three miles from Devonport, and between us was Plymouth harbour, which we could get across by means of a steam bridge worked on chains. Now, when any of us went from the one place to the other, a dog of ours used frequently to follow; but sometimes, when it reached the landing, it found that the steam bridge had already started; in that case it waited patiently for the return of the bridge, when it quietly walked on board and was taken across. Now I say it is impossible to declare that these actions were simply instinctive—the dog worked through a series of inductions. It had observed that the steam bridge went to and fro, and from observation it had also come to the conclusion that if it waited long enough on the bank, the bridge would come back again and take it across, and I do not think those acts differed from any actions of my own mind under similar circumstances. The great difference is that the animal has undoubtedly a very limited range of ideas; but I cannot understand that its actions are automatic, as Mr. Morshead asserts.* Mr. Mor-

* The following is even a more remarkable case than that cited by Mr. Row. A fox was one day observed on a bank of the river Blackwater, in Ireland, tearing a branch from a bush. This branch he conveyed to a point and set floating down the river; after a while the branch reached a number of wild fowl, which rose, to settle again when the supposed danger had passed. The fox repeated this process until the wild fowl no longer exhibited any signs

shead speaks of syllogisms and of reasoning as if they were automatic, and he thinks we reason in syllogisms. Now I do not think so,—we are not conscious of doing it. That is clear. It is true that our true reasonings may be reduced to syllogisms, and that we can detect correct intellectual operations by finding whether they vary from that form or not. But the animal creation, especially in its higher forms, is capable of making an induction, and that, as I understand it, and as I read in all logical treatises, is an intellectual act. Mr. Morshead seems also to think that the act of generalization is not an intellectual act ; but we are met with the great difficulty, that the paper has not exactly defined reason, intelligence, and other attributes, and this makes it very hard to arrive at a conclusion with regard to certain points in it. In the 7th section is an anecdote told here by Professor Macdonald, showing that a dog knew when it was Sunday. Now, I never had a dog that I could not teach to know Sunday from the other days of the week; or that offered to come to church with me. The paper admits that you can teach these animals a great deal, and that shows that they are possessed of something different from instinct.

Mr. REDDIE.—How can you teach a dog to know Sunday from the other days of the week ?

Mr. Row.—I have done so. The author of the paper seems to think that much of what the animal does, proceeds from its affections, and that its affections are instinctive. But to me that appears to involve a great deal of confusion. My affections in their higher forms are surely not to be characterized as instincts. They are very elevated feelings, belonging to my rational nature.

Mr. REDDIE.—Will you define what you mean by instinct ?

Mr. Row.—I have already said, and Mr. Morshead will agree with me, that it is an irresistible feeling impelling the subject of it to a certain action. He has also stated that man acts to a great extent upon pure instinct, but I cannot agree with him, for, as a rational being, I qualify my instincts by my reason. The week before last I had an example of an instinctive feeling. I was standing with some others in front of a magic lantern which was about to be used, when an explosion of gas took place. I jumped up ; that was pure instinct. But reason taught me that after the sound was past, danger had passed also. Mr. Morshead, however, says that memory will account for it. We will say that the jump was instinctive, but the next moment I reasoned that, the explosion having taken place, the danger was over. This was something more than an act of memory. Mr. Morshead refers to the fear which some people entertain of a cow. Now I have a great aversion to a horse, having been once kicked by one, and I have always taken great care to keep away from one ever since. That feeling is not instinctive ; but it is an act of inference that what has taken place once may occur again.

of fear at the floating branches ; he then entered the water with a branch, his head being concealed in the leaves, and on arriving amongst the ducks, three or four fell an easy prey.—ED.

Last midsunmer a case came under my observation, which, to my mind, conclusively showed that an animal possesses mental power as well as instinct. I ascended the Flesone with my wife and another lady. They rode on mules. The animal that my wife rode was a kind of king of the mules of Chamouni ; the lady who was with us rode a small mule, which was put first, with the guide to lead it ; but I could not get the king mule to go on ; when we reversed the order of the mules, instead of having to drive the king mule, it went fast enough. Now some process of reasoning must have taken place in the king mule. In this case the difficulty simply arose from our folly in placing the king of the mules in a wrong position. I would not attribute to animals any high rational power, but I cannot account for some things on the simple principle of instinct or mere natural sagacity. Animals are capable of the comparison of such ideas as they have, though those ideas are very limited. I do not think they can reflect on their ideas, but I think that there is every reason for believing that they are capable of comparing their limited ideas, and that they have certain ideas which approximate towards morality. Take the case of a dog. He gets thoroughly ashamed of himself when he has done something wrong. I have it on good authority that a good pointer who goes out with a bad shot gets very soon disgusted, and after a time will not work at all. Then take the case of pigeons. I know a case of a tame pigeon which paired with another. The cock and the hen set alternately on the eggs, and I have seen the hen pigeon, after she has had her turn, deliberately come out of the nest and drive the cock in to set on the eggs. (Laughter.) I maintain that shows an intelligence beyond what we can attribute to instinct. (Hear, hear.) I cannot see why any one has a right to assume the whole point at issue, and to say that an animal is a mere automaton. Then as to the capabilities for education which exist in animals, let any one go to Regent's Park ; there is not a single animal in the Zoological Gardens which has not learnt to be a beggar. (Laughter.) For instance, there is a seal in one of the basins ; it creeps out upon the stone which surrounds the water, and begs for anything it can get. Last autumn I saw this animal come out of the water, and the people would not give him anything to eat ; and the animal soon gave them a splashing by plunging into the water. Shortly afterwards a keeper made his appearance, and the animal had been so well taught that it came out of the water, received its food, and returned in a quiet manner. I cannot account for that as an act of pure instinct ; to my mind it showed that the animal had powers which were capable of instruction ; and if that is so, it must have had some degree of mental power. (Cheers.)

Rev. J. B. OWEN.—I want to ask if the objection you take to the word "automatic" is, that it is incorrectly applied to the active phenomena of instinct ?

Mr. Row.—My objection is that the word "automatic" is applied to several acts recorded in this paper, which are the highest acts of reason on the part of man, and which we consider as belonging to high mental processes.

Mr. OWEN.—Then I do not think there is any real difference between you and Mr. Morshead. An automaton, we know, in its simple Greek meaning,

is a piece of ingenious mechanism performing acts that seem like the results of its own volition. There are two instances at the Polytechnic. The first is the mechanical Leotard, which is as ingenious and elaborate a piece of automatic machinery as ever was known. What is its chief attraction? Why, that it seems to do the acts of mental volition, and it constitutes, therefore, one of the finest evidences of the skill of man in approximating, in however humble a degree, to the acts of the great God. The other automaton is one that is called the neurocrypt, which, as every Greek scholar will know, means "the hidden nerves." The figure of a young lady performs many graceful evolutions and postures, doing it all just like a living person. Now, in this paper we start from the premisses that the brute creation have no reason properly so called—neither the power to reason nor the possession of a mind. If they had this faculty, it would be proved by its being employed, for, though there may be many degrees in the use of reason wherever it exists, we know of no stagnant and inoperative gift of the Creator in the whole world. Whatever exists, He has caused its existence and given it a mission. That is true of instinct and of reason. They have their separate departments, notwithstanding that you sometimes see curious instances not exactly belonging to the ordinary operations of instinct on the part of animals which are brought into artificial connection with man. The dog, for instance, frequently performs acts which are automatic in a metaphysical sense, although they seem like efforts of its own volition; and I understand Mr. Morshead to use the word automatic throughout in that metaphysical sense, drawing a distinction between that and the reasoning acts of reasoning beings. A dog is not able to reason in what it does, but still there are some striking instances of wonderful things done by the brute creation. I remember reading a singular case in a book published by Mr. Bohn; I think it was "on the curiosities of instinct." In past days, the county of Lincoln was not so easily traversed as now; the roads being at times dangerous by reason of the floods that overflowed them. A traveller on horseback having a large quantity of money with him, stopped in the middle of the day by the side of a brook to take some lunch; having finished his meal, he mounted his horse, but a favourite little dog which accompanied him made strong protests against his proceeding on his journey, barking most furiously; but not succeeding by that means in being attended to, it flew at the horse; and, at last, in its extreme anxiety to stop its master, it bit the horse several times. The traveller, fearing that the dog had gone mad, drew out a pistol and shot it, leaving it on the road. He then went on, and when he reached his usual place of stopping for the night, he found that his bag of money was gone. Remembering then the instinctive efforts of his little dog to detain him at the spot where he had rested, he rode back to the brook, which was now a long way off, and found his money-bag on the spot where he had taken his lunch; but upon that bag, its last act having been one of humble fidelity to its mission, lay the dead body of the little innocent self-sacrificing dog. (Cheers.) In a case like that, there were three things at work in the dog: affection for its master, memory to recall the fate of the money, and

self-denial in dragging itself back some distance, wounded and dying, to cover the bag of money with its body. (Hear, hear.)

Dr. E. HAUGHTON.—If that story could be established as a real occurrence, it would be of great value in our discussion, because the qualities shown by that dog far transcend anything within the region of mere instinct. With regard to the bees which have been referred to, Mr. Row raised a question as to how a bee finds its way home, and what faculties the bee employs in the matter. I do not say that I can answer the question, but I can mention two instances which show the degree in which the bee possesses the power. I have read that in the country through which the Nile passes it is customary for the Egyptians to keep bees in hives on boats, and as soon as one honey-field is exhausted, the boats move down the stream, and a new field of flowers is reached, from which the bees can obtain their honey. So the boats go on from station to station as the flower-fields get exhausted; and in that way the Egyptians are enabled to keep many bees. The other instance which I wished to quote is the way in which the people in the west of North America find bees' nests. The bees often build in the trunks of old trees, and there are bee-hunters who obtain a living by cutting down these trees and getting a quantity of honey, which sometimes represents a ten years' store in a single trunk. The way they find out the nest is as follows : --The bee-hunter provides himself with three little pieces of elder-wood with the pith removed, and three stakes, and he then catches three bees and encloses one in each of his elder tubes. Opening one tube, he lets the first bee go, and watches the direction it takes, putting down a stake to mark it. He then lets another bee go, and puts down another stake, marking the direction it has taken; and he knows that the nest ought to be found at the point of intersection in the lines which the bees have traversed. He next lets off the third bee to confirm his view. If all three bees belong to the same nest, the point of intersection in their flight shows at once where the nest is ; because the bee does not fly about at all, but, after taking one or two circles in the air, it starts off for home in a direct line. That is a singular instance of the extraordinary instinct of the bee ; though I believe it is not an animal possessed of a high degree of intelligence. No doubt man, in common with the lower animals, possesses the faculty of instinct. Suppose a bee flies to sting me before I have time to think whether it is a bee or not, I instinctively put up my hand to brush it away from my face or head.

Mr. Row.—Not if you are accustomed to them.

Dr. HAUGHTON.—No matter whether I am accustomed to them or not. In that small act what a number of faculties have been employed, all of them instinctive. First, I heard the noise made by the bee ; then I distinguished that noise from any other ; then a message conveying intelligence of the fact went to my brain ; and then another message came back from the brain to the muscles of the arm to put that arm in motion in order to strike away the hurtful insect. All these faculties are put in motion without my having reasoned on the matter. I have performed no act of reason ; I have not had time to do it ; the faculties employed are simply involuntary.

Mr. Row.—If a bee came to me, I might be tempted to strike it away ; in which case I know I should be stung ; and, therefore, I should keep my hand down, and refuse to strike against it, as a matter of policy and reason.

Dr. HAUGHTON.—Well that, of course, would be a reasoning act. However, so far as the lower animals are concerned, I do not think they can generalize. We have all heard of dogs in a country strange to them, getting into ships and being carried back to their own land. How they manage to get into the particular ship that is going to the place they desire to arrive at cannot be explained, but they frequently do come home to their masters in that way. I believe that the faculty of induction is to some degree possessed by the lower animals.

Mr. REDDIE.—I should like to have a few explanations from Mr. Row as regards a definition of instinct. I have always understood that it was not merely sensational, but something that implied that if you could attribute it to reason it would be of a higher kind than almost the highest act of reason we know of. If you supposed that the bee understood the construction of its cell, it would be evident that the bee, from the very commencement of its existence, had solved a most difficult mathematical problem—one only recently understood by our most celebrated mathematicians ; but perhaps there is less of mathematics in the formation of the bee's cell than mathematicians think. My impression is that the bee instinctively constructs its cell in a round form, and having formed one, he forms another one like it. The first cell would be round, but when the second was formed adhering to it, and others all round it, it would be drawn by the adhesion of the others into a hexagonal form.

Mr. Row.—You know that no one bee constructs the cells. The work is done by a vast number.

Mr. REDDIE.—Yes ; and when you speak of the bees modifying their architecture, I do not see what else they could do. If you put something across their path, they cannot help modifying their architecture.

Mr. Row.—But one piece of comb will derange the whole architecture of the hive.

Mr. REDDIE.—Precisely so ; but I do not see how they can help themselves.

Mr. Row.—They might forsake the hive and get a better one.

Mr. REDDIE.—They only do what an ignorant cottager would do in building a house,—if not round a square, at all events round a corner.

Mr. Row.—I should think that this power of modification is something above mere instinct.

Mr. REDDIE.—Dr. Haughton said something about the large quantities of honey to be found when the bees are in a natural state, as in the prairies of America, where they seem to make a great deal more honey than is of any use to them ; but the fact is, that the bee has its nature given to it by God, so that it may be serviceable to man. The construction of the bee's cell is a natural act, like the construction of the beaver's dam, or the bird's nest, without either of these animals having recourse to mathematics. The storing up of the honey is really for man's use, though the animal is unaware of the fact. Dr. Haughton mentioned the case of dogs making sea voyages from

foreign countries, and getting home. But that is not a very good example of animal wisdom. People used to offer up a sacrifice when they were saved from shipwreck, but Bacon says there is no record of those who got drowned. Dr. Haughton does not tell us of the dogs which did not get home. (Laughter.) I have even heard of an inferior animal to the cat doing a much more instinctive thing—they say rats will leave a ship when it becomes unsound. If the rats which live comfortably on board as long as the ship is serviceable, quit the vessel the moment they find it is getting rotten, surely it is a strong instance, I will not say of induction, but of instinct. I do not think there is much reason in the matter. Then with regard to the instances given by Mr. Row, I think one of his inductions was particularly faulty in the instance that occurred when he was on a continental tour, he did not give us a fair case of induction. As to the bad habits picked up by the animals in the Zoological Gardens, Mr. Row says they have all been taught to be beggars, but I do not think there is any evidence of moral deterioration or advancement in that. The animals are not better nor worse than when in a state of nature. But it may be asked, "What is all this about; what are you going to prove?" Mr. Morshead's paper is very brief, and it is supplementary to a previous one, which defined the contrast between the inferior animals and ourselves more fully. There is, however, a valuable point in the present paper, which gives us a sort of focus for our discussion. I refer to the concluding words, quoted from Lord Brougham, and which must have been written twenty-five or thirty years ago. It is clear that Mr. Darwin's and Professor Huxley's theories as to natural selection, and so forth, were then foreshadowed, with the idea that man may somehow or other have been got out of the monkey. The quotation shows what a very old kind of scepticism these gentlemen are *rechauffing* and professing to be quite new. It is that old notion of Lord Monboddo's, of monkeys losing their tails by sitting, and fowls becoming web-footed by going about on marshy ground. (Laughter.) But Mr. Darwin invents a new theory of natural selection to account for these very same theories, for which there is no foundation. When people cast about for reasons to support a theory, it is very plain that that theory is a preconceived idea. Mr. Darwin elaborates his theory, and makes many converts; but when he finds that his theory is faulty, he is obliged to prop it up by the new theory of pangenesis. In point of fact, we get nothing but the most old-fashioned theism and infidelity of a former age furbished up and re-introduced as new. (Cheers.)

Rev. J. JAMES.—The case of the king mule mentioned by Mr. Row is borne out by a thousand instances of the kind. I have driven many horses, fast and slow, and sometimes the fastest horse in my team has moped and sulked and refused to go on when kept behind the carriage drawn by another, whereas if it was allowed to run alongside, it would go on all right. The other night the discussion led us to speak of the spirit, the soul, and the body; and a most true and philosophical dogma was pointed out to have been enunciated by St. Paul, and to have been proved by the facts of our nature;

showing that those who think they can philosophically discuss anthropology without taking into account the spirit of man were not acting a philosophical, but on the contrary a most unscientific part. Psychology is the science of the $\psi\nu\chi\eta$, and $\psi\nu\chi\eta$ is in general correctly translated soul, but with a wider meaning than I believe it strictly speaking ought to have. In both the Old and the New Testament the soul is popularly spoken of as including the spirit as well as the soul properly speaking. $\psi\nu\chi\eta$ really means life—that which animates the body, whether it be a tree or an animal. The life in a tree or in a dog, a cat, a horse, a bee, or a man, is that which animates and energizes the body,—that which calls out all the forces of which the physical body is capable. Whatever is necessary for the existence of the body or life, the soul energizes the body to do. Whatever faculties and capacity for action, and whatever powers of activity are in the body, are brought out by the healthy life or soul, the body being thereby enabled to do the thing that is obviously before it at the time. This applies to men as well as to the lower animals. The $\psi\nu\chi\eta$ urges us to do everything necessary for our subsistence and defence ; the $\psi\nu\chi\eta$ enables us to exercise every limb we have and all the nerves and muscles in our body. Take the case of the cat at the door. That is simply a case of the cat having gone in and out over and over again, and therefore is a matter of habit. A much more difficult matter is the case of a cat carried in a hamper for a hundred miles and finding its way back again. There can indeed, strictly speaking, be no operation of reason there, but there is something of a most wonderful character, because the eyes have not been employed. No doubt the cat has an instinctive desire to get back, and this paper speaks of instinct as being a carrying out of such desires, and speaks of the impressions made upon the eyes and ears, and so on. The desire to be in the same place that it was in before would no doubt induce the cat to exert itself to find the way home, and probably it would have to beat about many bushes and roads before it found the way. As to the bees, it has been stated that before they take their direct flight homewards they make two or three circles in the air. Probably in doing so they are feeling in what direction the wind blows, in order to find their way ; and though there is an impression of memory involved, there is, strictly speaking, no reasoning at all. The bee simply carries out the natural design or condition of its existence that it should have a cell, and having made that cell, it is its nature to inhabit it and to return to it. As to the dog at Devonport, I do not see anything more striking in that than in the case of the cat going to the door. It is simply a matter of habit. There is memory in it no doubt, but what were eyes given to the animal for except that it should take notice of things ? Instinct, in short, is an exertion of the physical parts of the healthy body urged by the healthy life that is in it. I believe the spirit is the intellect, and though the word $\pi\nu\epsilon\nu\mu\alpha$ was not generally used in that sense among the classical writers, but rather $\psi\nu\chi\eta$, still I think we may fairly, knowing so much more than they did, distinguish between these things. We still talk of the sun rising, although we know that it does not rise ; but in scientific discussion we should keep these matters clear. It was said the other night that the word

Spirit in the New Testament ought properly to be understood of that gift of the Holy Ghost which is given to us at our baptism and regeneration ; but I think the answer to this was contained in what was said at the time, that the Holy Ghost could not be otherwise than blameless, and would be preserved blameless, and that S. Paul therefore (1 Thess. v. 23) could not so have used the word.

Mr. R. W. DIBDEN.—You spoke of bees feeling the way the wind blows. But suppose the wind had changed after the capture of the bee, then, according to your theory, the bee would not arrive at home at all.

Mr. JAMES.—The bee would not be wholly guided by the wind. It would have its eyes, and be able to see a long way.

Mr. Row.—It would be a rational act of judgment if they went by the wind. (Hear, hear.)

Rev. Sir TILSON MARSH.—I have listened with much pleasure to the speeches—many of them of great ability—which have been delivered this evening, but I have come to the conclusion that we cannot fix the exact line of distinction between instinct and reason. The two qualities seem to trench on one another, and an instance of that occurs to my mind now. A farmer in Suffolk, who was in the habit of going to the county town where a market was held once a fortnight, possessed a dog. The farmer often went to the town early in the morning, and one winter's morning he went at six o'clock, accompanied by his dog. On the journey the horse slipped and fell, and the master was thrown and broke his leg, and lay helpless in the road. The dog appeared anxious : the farmer made signs to it to go home, but it would not stir. At last it occurred to the master that the animal wanted some authentic testimony of the accident. The farmer's flesh had been wounded, so he took out his handkerchief, dipped it in the blood, and gave it to the dog, which immediately seized it and ran home with its credentials. That is a well-authenticated case, and it does show that instinct at times approximates most closely to reason. But I fall back upon the definition which was given at our last meeting. I believe that the powers of animals all come under one term, as included in the $\psi\nu\chi\dot{\eta}$. The distinctive powers of man, such as generalization, which is evidently confined to humanity, come under the term $\pi\nu\varepsilon\nu\mu\alpha$, and I believe this difference would account for the divine statement made by St. Paul when he speaks of $\tau\ddot{o}\ \delta\lambda\acute{o}k\lambda\eta\rho\nu$ * as consisting of $\sigma\omega\mu\alpha$, $\psi\nu\chi\dot{\eta}$, and $\pi\nu\varepsilon\nu\mu\alpha$. No doubt there are cases to show that $\psi\nu\chi\dot{\eta}$ and $\pi\nu\varepsilon\nu\mu\alpha$ have been used at times as if convertible terms ; but if you inquire into that special use, you will obtain an answer to any objection which may be urged. Allowing that there is this trinity in man, the $\psi\nu\chi\dot{\eta}$ and $\pi\nu\varepsilon\nu\mu\alpha$ express the higher nature, the $\psi\nu\chi\dot{\eta}$ being the lower of the two portions, and the $\pi\nu\varepsilon\nu\mu\alpha$ being the superior intellectual and spiritual power. There is one

* 1 Thess. v. 23. The word is here used as a substantive neuter, $\delta\lambda\acute{o}k\lambda\eta\rho\nu$ $\dot{\nu}\mu\omega\nu$, "your whole" ; see Wetstein, &c.—"Quod omnibus suis partibus constat" ; see Wolfius.—ED.

decisive answer to the objector, for, among other passages, there is that contained in the 15th verse of the first epistle to the Corinthians, where St. Paul defines the nature of the body as it exists here and as it shall exist in the glorious future, speaking of the present body as $\sigmaῶμα \psiυχικὸν$ and of the future body as $\sigmaῶμα πνευματικόν$, which shows that the $\piνεῦμα$ is superior to the $\psiυχὴ$. It would be well worth our while to have a paper read on this subject, showing precisely how far the $\psiυχὴ$ will account for the powers of animals as exhibited in what we generally call instinct, though it approximates at times very nearly to reason. It is very difficult indeed sometimes to mark the exact line of distinction. No doubt some will think this out and draw up a careful and able paper that might be satisfactory to many people in the present day. The powers of the $\piνεῦμα$ are capable of infinite expansion, as in the instance of the blessed Third Person— $\tauὸ Πνεῦμα Δγίον$. I believe the powers of the $\piνεῦμα$ are great powers ; indeed, only limited by eternity. (Hear, hear.)

Mr. JAMES.—I appeared to say that in the ancient classics there was no distinction between the soul and the spirit, but it has occurred to me since that in the Latin the word *animus* is never used of life or soul, but of the mind and intellect. *Anima* is constantly used of soul or life.*

Rev. C. GRAHAM.—After our Lord's resurrection, He said to His disciples : “Handle me and see ; for a spirit hath not flesh and bones, as ye see me have.” No doubt Sir Tilson Marsh’s distinction is correct so far. At our last meeting I took exception to making these distinctions in the use of words in the New Testament, and I adduced two passages on that point which I will not now repeat. I might take another from the close of the epistle of St. James, where it is said that “He which converteth the sinner from the error of his ways shall save a soul from death, and shall hide a multitude of sins.” There is no doubt that $\psiυχὴ$ there refers to the immortal spirit which shall be saved from death, for the contrary supposition would apply to it the sense of life, in which the word is generally used—perhaps ten times for once the other way—and the passage would then imply that if the sinner was not led to repentance, it would lead to the death of the body, a consequence which we could not sustain from Holy Scripture. The distinction drawn by Sir Tilson Marsh must not be pressed too closely, because there can be no doubt that $\psiυχὴ$ is used sometimes convertibly with $\piνεῦμα$, and there is no doubt whatever that the $\piνεῦμα$ of the New Testament answers to the *Ruach* of the Old Testament and the $\psiυχὴ$ to the *Nephesh*. I do not wish to depart or shrink from the position I took in the last discussion. I regret very much that this paper consists more of hints, if I may so call them, than of anything else, for the subject is not exhausted,

* e.g. Juvenal, Sat. xv. 147-9 :—

“ Mundi
Principio indulxit communis conditor illis [sc. mutis].
Tantum animas, nobis animum quoque.”

and it might have been more thoroughly brought out. I do not deny the teaching of the paper, that there is a most marked distinction between instinct and reason, though I know that the boundaries of the two often seem to run into each other ; but it seems to me that we have ground which we can hold when we come to this great fact, that man has got a conscience —man has got a moral nature. He knows that fact most thoroughly, for when he does anything which is contrary to his moral nature, he condemns, and he cannot help condemning himself. No man would naturally wish to condemn himself. Those doing anything contrary to their own consciences would naturally wish to forget the thing they had done wrongly, and would desire to put away the uneasy feelings awakened in their minds ; but they cannot do it. Now that conscience is universal. You find it everywhere. It is the remark of Dr. Reid, in his Philosophy, that you find it—the principle of justice—"as strong within the savage breast as in the civilized Frenchman or Englishman." If you invade the rights of the savage ; if you make an attack upon his children or his wife ; or if you take away his property, he has as strong a resentment and as burning an indignation against the oppressor as we should have under similar circumstances. He has these feelings in an equal, and perhaps in a superior, degree to the civilized man. Conscience, then, is universal, but there is no innate conscience in the inferior animals. It has been said that they manifest something like a moral nature in the fear which a dog has of being punished : I have lately heard the owner of a dog say that he saw in it the consciousness of shame. But this is in consequence of the fact that the dog has been punished for these things before, and therefore he shows fear and shame. But it is not so with man. Man has a moral nature and a conscience, and the power of that conscience is sometimes so great as to cause men who have violated it to endeavour to get rid of their compunction by putting an end to their own existence. We have had this power exhibited from the very beginning of the history of men. We have Cain himself saying, "every one that findeth me shall slay me," because he had embrued his hands in his brother's blood. This sense of justice is a natural sentiment of man, and the very existence of revenge implanted by God as an instinct in the human breast for our own safety, proclaims with trumpet tongue that in universal man there is a sense of justice and of right and wrong, which implies a moral nature and a conscience, which I am bold to affirm it is impossible for any one to show existing in the inferior animals. Of course I do not refer to man in the very lowest state of barbarism, where neither mind nor conscience is developed. (Cheers.)

The CHAIRMAN.—I should like to offer a few remarks before this discussion is closed. The criticism which appears to me to have been passed on this paper is, that it comes to no conclusion. There has been no real comparison instituted between the psychology of the brute and of man, and we have had no definition of instinct. The answer to the latter objection appears to have been given to us by one of the later speakers, who suggested very properly that perhaps there was no definition of the word "instinct."

We have been told a number of very interesting anecdotes, showing that certain results are arrived at by animals, which look very much like the results of reason. To what are those results attributable? Do they come from a reason like our own? Hardly. Yet those results seem very remarkable when we compare them with our own modes of action. We speak of an instinctive action in man as one in which there is no conscious exercise of the will. A great majority of such instinctive actions are performed with a view to self-preservation. When we see in ourselves an action performed which we cannot attribute to any rational process of deliberation, we say it is performed instinctively. We apply the same term to the actions of animals which are not apparently results of deliberation, but it is an evasive term. There is a similar use of a term in the word "chance." When we do not know the cause of a phenomenon, we say that chance produced it. In the same way we use the word "instinct" evasively, to show that there is something to produce a course of action, but that we do not know what it is. For that reason there is no definition of instinct. A question was raised about the intellectual powers which animals possess or may possess. It seems clear that they have memory. We are also told that they have jealousy; but these emotions, in the present discussion, we have nothing to do with. Now Aristotle, in sketching out the mental process, says we first begin with memory; a number of memories produce an experience, and from experience settling itself down in the mind arises generalization, which leads to art and science. We may apply this to the question of the scientific and artistic power of brutes. A brute has memory, and can collect into an experience a number of unmemories; but his powers stop there. He cannot generalize, and there you have the difference between human rationality and the apparent rationality of brutes. The latter possess no power of concentration or induction. (Hear, hear.)

The Meeting then terminated.

MR. MORSHEAD'S REPLY.

I HAVE read carefully through the foregoing discussion without being able to discover that any of the points raised in my paper have been touched.

In reply to Mr. Row I may remark that the words "reason" and "intelligence" are used interchangeably by that careful writer Dugald Stewart. I have not, however, used these terms quite synonymously, but have employed them in their ordinarily accepted meanings. I have not, as a matter of fact, used the terms "reason" and "reasoning" convertibly:—the expression used in the fourteenth section of my paper is "power of reasoning," and it is surely unnecessary for me to state that, under any circumstances, "reasoning" does not always mean "argument," and that when I deny brutes the power of reasoning I do not mean to say that they are unable to argue. I am of course unable to say whether what I call "natural sagacity" may, or may not, include a large share of what Mr. Row calls "reason." As to the statement that I have "confounded reason, intelligence, and other attributes," I should perhaps have more fully apprehended the extent of the confusion if Mr. Row had given a definition of the difference which he holds to exist between reason and intelligence.

With regard to the Chairman's remarks on my paper,—“that it comes to no conclusion;” that “there has been no real comparison instituted between the “psychology of the brute and of man;” and that “we have had no definition of instinct,”—I can merely say that the “conclusion” of my paper is distinctly stated in the six opening lines thereof, and that my view of instinct is clearly laid down both in the present and my former paper. If the Chairman had any objection to my definition, I regret he did not explain that objection. The comparison between the psychology of the brute and man runs through every paragraph of my paper, the object of which is to show that *all* the actions of the brute may be referred to an instinctive source (third section): and I did not think it incumbent upon me to show that *all* the actions of man do *not* proceed from an instinctive source. This view is held—practically at least—by the Fatalists, with whom I purpose dealing in a future paper.

I beg to express my thanks to the Rev. J. B. Owen for his explanation of the sense in which I employed the term “automatic.”

I cannot but think that the value of the discussion would have been enhanced had my paper been sent beforehand to those likely to join in the debate, for then they would not have been under the disadvantage of discussing the paper unprepared.*

* By a new arrangement, in force since the beginning of this year, 1871, copies of the papers to be discussed are distributed a week before hand.—ED.