
The Sense of Smell in Animals

THE hypothesis put forward by Mr. Wallace in *NATURE* of the 20th ult., to explain the power possessed by some animals of

finding their way back to their homes after having been conveyed from them in such a way as to preclude the possibility of their seeing the road by which they travelled, contains, I think, the solution of a hitherto perplexing problem. To ascribe this power, as is usual, to instinct in the customary sense of the term, is to give what Mr. Bain calls "an illusory explanation of repeating the fact in different language," and it is manifestly impossible to ascribe it to instinct, as that term is understood in the evolution theory of mind. I am glad to see a psychologist like Prof. Robertson giving in his adhesion to Mr. Wallace's view. But while in the main accepting it, and arguing forcibly in its favour, Prof. Robertson hesitates to affirm that it affords an explanation of the whole of the facts in question. Is this failure, if failure there be, inherent in the explanation itself, or does it lie in our imperfect knowledge of the facts to be explained? That there are difficulties cannot be denied. For example, it is difficult, to say the least, for the human mind to form the conception of a sense of smell, so acute, so objective, and furnishing sensations so strongly persistent in the ideal, as to enable an animal by its means alone, to retrace unerringly long and devious roads travelled over but once, and under circumstances rendering impossible the co-ordination of sights and smells habitual to the animal. In such cases smell must be a much closer second, if second at all, to sight, than touch is in man. No blindfolded man could perform a like feat by means of unaided touch, nor, do I think, could a blind man, though with the blind this sense becomes, by the cultivation it receives through a hard necessity, greatly more acute than it is in normal cases. But difficulties like these are such, I believe, only because of our very limited acquaintance with the psychology of the lower animals. One of the chief desiderata in mental science is, it seems to me, such a psychology, based upon principles generalised according to strict inductive methods, from a body of numerous, varied, well-authenticated, and scientifically made observations of the domestic and other animals. A work of this kind we have not, but, I believe, the lines upon which it should be constructed are already laid down in Mr. Spencer's truly great work, the "Principles of Psychology." When this branch of psychological science has been brought into something like parallelism with human psychology, difficulties, such as I have hinted at, will, I venture to say, be effectually removed, and Mr. Wallace's explanation will, as he claims for it, "cover all the well-authenticated cases of this kind."

In the extended scope claimed for this hypothesis by Prof. Robertson, viz., as explanatory of the nature of external perception in dogs, there appears to be a difficulty raised. The most refined and deep-penetrating psychological analysis, of both the empiristic and evolution schools, have incontestably established that our mature visual presentations are but symbols of the earlier and really genetic presentations acquired through touch combined with muscular feeling. Granting, as seems undeniable, that smell in dogs holds, in many respects, a place analogous to that of touch in man, would the earliest and the genetic presentations of externality in these animals be those furnished by smell, with or without the aid of muscular feeling?

Before concluding my letter, I should like to offer a remark upon the supposed *experimentum crucis* of Mr. Wallace's hypothesis, suggested by Mr. Bennett. The smell of stale fish would undoubtedly interfere with and overpower ordinary smells in the human organ. But is it not an anthropomorphical fallacy to assume, as Mr. Bennett appears to do, that such would be the result in the case of a cat? From the almost purely subjective and comparatively undeveloped sense of smell possessed by man, there appears to me to be no conclusive argument to the highly objective and extremely acute sense of smell possessed by certain animals. We are not warranted from our own experience in inferring of a sense, quantitatively, if not qualitatively, so very different, that one powerful sensation must necessarily exclude fainter sensations of a like order. Normally, vivid sensations of a particular order do tend to exclude with more or less completeness fainter like sensations. But the animal, in the circumstances in which it is placed, is as Mr. Wallace shows, in an abnormal condition. Its attention is concentrated on the unfamiliar succession of smells it is encountering, and under such a stimulus these ordinarily fainter sensations may not unreasonably be supposed to become unwontedly vivid, and capable of powerfully affecting the animal's consciousness, despite the resistance of what under common circumstances would prove an effectual obstacle to their conscious presentation. A complete *experimentum crucis* would require that the animal should, during the whole journey, be

entirely smell-muffled, and Mr. Bennett's expedient could not, I think, be relied upon to produce this effect.

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