SCIENTIFIC CORRESPONDENCE

Pigeons, canaries and problem-solving

SIR — I regret that I must question the accuracy of Pastore's[1] recent letter concerning my report of problem-solving behaviour in pigeons[2]. He suggests that I was remiss in not citing his early studies in which a canary was confronted with several Köhler-type problems. He implies that the canary solved both Köhler's one-box problem and Köhler's stacking problems in an "insightful" fashion, but the original reports of this work[3,4] do not confirm that.

The single canary that Pastore confronted with a variant of the one-box problem required 25 reinforced trials before it could move its box (a cardboard "prism") smoothly to the correct position on the floor of the chamber. So the behaviour that superficially resembled that of Köhler's chimps was, as Pastore originally reported, learned in virtually the same haphazard fashion as the escapes of Thorndike's[5] cats. Ironically, the performance of the canary was exactly that which Köhler dismissed as mere "trial and error". By no reasonable criteria could the canary's performance be considered "insightful".

On the stacking problem, in which stacking behaviour is also established haphazardly after many reinforced trials, Pastore[3] originally reported that "in the crucial trial, when both prism and box were out of position, the canary seemed to be unable to stack them in a meaningful way. Actually, the canary did stack prism and box appropriately in only 10 of 100 trials" (p. 289). No mention is made of success in stacking a larger number of boxes, contrary to Pastore's[1] recent statement. A second canary could not complete even the preliminary stages of the experiment. Praxists and psychologists long ago passed judgment on these modest demonstrations: they are almost universally uncited in the literature relevant to my research.

In contrast, my colleagues and I reported a systematic study with 11 pigeons in which all 3 with relevant training histories solved the box-and-banana problem in a dramatic human-like fashion the first time they were confronted with it. The performances satisfied all of the traditional criteria of "insight": periods of apparent confusion were followed by sudden, rapid, and entirely appropriate performances. By systematically varying the training histories of other birds, we also determined the possible contributions that a variety of different experiences had made to success in the problem. Finally, we offered a running account of the novel performances in terms of empirically validated principles.

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