From time to time, as space and interest permit, we will reprint classic papers from the early years of Behaviorism, our precursor journal. Not all libraries carry these early issues of Behaviorism, but many of the topics they discuss remain current. We invite suggestions for future reprints.

Richard Herrnstein's 1972 paper on instinct reminds us that progress in psychology is not so much a rising slope as a helix. The same issues tend to be revisited repeatedly, with a little advance on each visit, rather than being solved one after the other in linear fashion. Issues are often revisited with little recognition that they are not new and that some progress towards a solution may have already been made. Sometimes problems are actually solved the second (or third, or...) time around. But sometimes we merely repeat, often without attribution or much additional understanding, what has been said before.

Herrnstein's article offers several examples of this process. A problem that most would now regard as largely solved, is Henri Fabre's famous experiment with mason bees. The bees lay their eggs in cells they have filled two-thirds full with honey. What would the bee do, Fabre wondered, if he removed the honey as soon as she left after each provisioning visit. Would she continue provisioning indefinitely? Would she give up and lay elsewhere? Or would she lay after the normal number of provisioning visits, irrespective of the amount of honey actually accumulated? Mason bees do the latter, of course, laying their eggs as soon as the requisite number of provisioning visits have been made, no matter how little honey remains. Herrnstein quotes Fabre's intuitionist interpretation: "An instinctive predisposition is her only guide... infallible under normal conditions, but hopelessly lost when subjected to the wiles of the experimenter" (p. 82). No contemporary biologist would succumb to Fabre's lyrical mystification. As Fabre points out, under normal conditions, honey deposited is proportional to number of provisioning visits. It is a matter of evolutionary accident, therefore, what natural selection will fix on as the controlling stimulus for egg-laying: the actual accumulation of honey, or the number of provisionings. Since number of provisionings is more easily measured (no perceptual apparatus is required, merely
some kind of internal accumulator), it is hardly surprising that this is in fact the chosen variable.

A problem that has moved some way towards a solution, but has evidently forgotten some of its history, is the problem of reinforced choice, the topic to which Dick Herrnstein made his most influential contribution. Herrnstein reminds us that Leonard Troland's influence in contemporary psychology much understates his insights into motivational problems. His principle of retroflex action is much more modern than the archaic term implies: "The strength of any . . . action tendency [choice response] will . . . be proportional to the time integral of the affective intensities [reinforcements] which have been correlated with the given form of response during the total life-history of the individual (italics added)" (1930, p. 478). This was twenty years before the advent of mathematical learning theory and fifty years before melioration, Herrnstein's own suggestion for a choice process, both of which tried to explain choice not in terms of "total life-history" but by looking only at events in the very immediate past. This focus on local events was probably a mistake, as my colleagues and I tried to show with a crude implementation of Troland's idea that we called the cumulative-effects model (Davis, Staddon, Machado, & Palmer, 1993). Our notion was that choice is driven by a variable that is simply the accumulation of all the reinforcements received for a given response which, as you can see from the substitutions in square brackets, is just Troland's idea, although we were totally unaware of the fact at the time. The cumulative effects model is too simple, but it does explain some apparently "cognitive" things, like improvement in serial reversal learning and faster adaptation to more swiftly changing contingencies. And it shows that Troland was right in thinking that remote events play a decisive role in preference.

Finally "Nature as nurture" shows the link between Herrnstein's roots in animal-learning behaviorism and his last notoriety as co-author of *The Bell Curve*. The book was not an aberration, an eccentricity, or even a political act, but an extension to human behavior of Herrnstein's lifelong struggle to understand the relation between learning and genetic endowment. Just as he was critical of early "empty-organism" behaviorists, he also found fault with those students of human aptitude who, for diverse reasons, want to minimize the role of the innate and (they are not necessarily the same) the unmodifiable in human behavior.
REFERENCES

