performance decreases. These data confirm those reported by Cross & Brown (1965), and Cross et al (1964), and extend the generality of the finding to include stump-tailed monkeys and two quite different acquisition procedures.

The finding that method of training revealed no differential effect either upon initial learning or upon reversal performance was unexpected. From a cursory consideration of the two different methods, it would appear that the position-discrimination procedure employed would offer two possible cues, those of object and position, while the object-discrimination procedure affords only one cue. The failure to find differences between training methods may be related to the fact that Ss had not had sufficient experience in solving discrimination problems to utilize more than one cue. In any event,

these data demonstrated that regardless of training method, Ss consistently performed less well in reversal as the number of acquisition trials was increased.

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Note

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Comment

In a recent article (The effect of false-information feedback upon psychophysical judgments. *Psychon. Sci.*, 1964, 1, 317-318), Kinchla and Atkinson raise the question of "whether the introduction of false information on no-signal trials gives rise to points that fall on the ROC curve defined by the experimental conditions involving no misinformation." Regrettably, the authors fail to describe the form of their theoretical ROC curve and present no ROC curves "defined by" the two points obtained under conditions of no misinformation. As a consequence I fail to see how Kinchla and Atkinson could hope to establish whether or not misinformation produces points either on or off such an ROC curve. Nevertheless we are told that, on the basis of inspection, "the four points fall on the same ROC curve" and that "a simple linear ROC curve would provide a reasonably good account of almost every S's data."

Now it seems clear that if Kinchla and Atkinson meant to predict linear ROC curves for yes-no data—a dubious proposition in the light of Atkinson's theory, as well as others—they should have drawn a line through the two points obtained for $\lambda = 0$ and looked to see whether the two points obtained under misinformation might be said to lie upon it. If we do this, we find that they lie beneath it (9 of 14 Ss for $\gamma = .25$, $\lambda = .33$, and 12 of 14 Ss for $\gamma = .50$, $\lambda = .50$). If, on the other hand, Kinchla and Atkinson meant to predict nonlinear ROC curves, then their claim that a linear function well describes their data implies unequal detectability for their four experimental conditions. In either case Kinchla and Atkinson should have been led to conclude that misinformation and correct information give rise to points which do not lie on the same ROC curve. As a matter of fact, however, most listeners' data is better fitted by a curvilinear ROC curve of the Tanner-Swets-Green variety than by a linear function. (The apparent linearity of even the averaged-data curve in Kinchla and

Atkinson's Fig. 1 is less convincing if we replot the data points on a less compressed scale.) Moreover, if we take the four average coordinate pairs, convert their proportions to z-scores, and replot the points on normal-normal, rather than on linear, coordinate paper, we find that they are fitted nearly perfectly by a straight line. On the strength of this evidence it may be reasonable to conclude that a single ROC curve encompasses performance obtained under conditions of correct information and misinformation. I am afraid that the analysis that incorrectly led Kinchla and Atkinson to the same conclusion serves only to mislead their readers.

The authors also conclude that "false-information feedback increases both the probability of a hit and of a false alarm, and at the same time reduces the overall probability of a correct response." This conveys the erroneous impression that $p(C)$ may vary independently of $p(A_1)$. In fact $p(C)$ varies according to $p(A_1)$, the detectability of the signal, and the a priori signal probability. If a listener operates at the point on his ROC curve where $p(C)$ is a maximum—a point Kinchla and Atkinson's listeners seem to approach when they are not misinformed—then any change in $p(A_1)$, upwards or downwards, inexorably leads to fewer correct judgments.

Finally, Kinchla and Atkinson state that "the ratio of signal energy to noise power in a one cycle band $[E/N_0]$ " was held constant at 2.9 throughout their experiment. The level of detectability indicated by the ROC curves they present, however, is considerably and inexplicably better than what one expects for $E/N_0 = 2.9$. About three times this value of E/N_0 is usually required to achieve the level of detectability they have obtained.

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(See page 132 for reply by R. A. Kinchla and R. C. Atkinson.)