DISCUSSION

JOSEPH I. BLUHM[1]—At the U.S. Army Materials Research Agency we had the occasion to make some slow tearing tests on wide sheets (12 in.) of aluminum alloys. We found that the unit-propagation energy reached a stable level only after the crack had propagated some distance. Furthermore, the unit-propagation energy varied considerably from its steady-state value. Hence, any technique of taking the *total* area under the load-deformation curve would surely include some errors due to these boundary effects. At this Agency, we continually determined the unload slope of the load-deformation curve at various crack lengths and were thus able to get the instantaneous rate of propagation energy.[2]

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J. G. KAUFMAN AND H. Y. HUNSICKER (*authors*)—The authors appreciate Mr. Bluhm's comment and agree with him that values of unit propagation energy determined in Kahn-type tear tests are not absolute measures of the steady-state rate at which energy is utilized. As stated in the text of the paper, it is recognized that values of unit propagation energy are specimen-size dependent. However, their primary value is for merit rating alloys and the excellent correlation between unit propagation from the tear tests and K_c or K_{Ic} from fracture toughness tests provides adequate confidence of their ability to indicate realistic ratings.

[2] See discussion of paper by Klier et al, "A Study of Certain Factors Which Modify Slow Crack Propagation in High Strength Sheet Metal," *Proceedings*, Am. Soc. Testing Mats., Vol. 64, 1964.