DISCUSSION

Doris Kuhlmann-Wilsdorf[1]—Let me make the following prediction: every addition to an alloy that is fully soluble and does not stimulate precipitation will reduce swelling. Namely, such additions are expected to form Cottrell atmospheres about dislocations and thereby to partially relieve the strains in the dislocation cores that we believe to be responsible for the impediment against dislocation climb which gives rise to the "bias" held responsible for swelling.[2]

F. A. Smidt[3]—I notice that solute additions such as silicon cause a shift in the peak swelling temperature. I wonder whether Wilsdorf's suggestion that any element soluble in the lattice will suppress swelling by segregation at dislocations can also explain such temperature shifts.

J. F. Bates (author's closure)—It is not my conclusion, at this time, that the major effect of these alloying additions, and subsequent neutron irradiations, is to invoke a shift in the peak swelling temperature. The resolution of this question and Wilsdorf's suggestion must await the availability of higher fluence reactor-generated data.

M. Simnad[4]—There may be symbiotic effects resulting from the presence of several components and impurities in the alloy. Also, segregation would give rise to nonuniform swelling with elements which have a tendency to segregate.

J. F. Bates—This may be true; however, it is interesting to note that these same alloys were used to generate data which showed that the unirradiated density of the alloy system varied linearly with elemental additions of each of the constituents mentioned in the report (See Ref *2* of paper).

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[2] Compare *Journal of Applied Physics*, Vol. 36, 1965, p. 637 and *Scripta Metallurgica*, Vol. 7, 1973, p. 1059.

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