The calculations should have been stopped at this point, but an error in data selection was made; this was the acceptance of the then generally accepted view [Shunk] that the temperature-invariant reaction was peritectic in nature, with the temperature of the reaction being $\sim 7^\circ\text{C}$ above the melting point of Cu. Accordingly, minor revisions were made in the parameters for ${}^E\Delta G_L$, and this revised function in combination with the previously given functions for ${}^E\Delta G_{\text{bcc}}$ and ${}^E\Delta G_{\text{fcc}}$ predict the phase diagram. This is shown in Fig. 1 by the solid lines and, in particular, the peritectic reaction, which is shown in the inset of Fig. 1. It may be noted that the Nb-rich solvus from the revised calculation is, on the scale of Fig. 1, indistinguishable from the initially calculated solvus, but the liquidus of the revised calculation is a significantly worse fit to the liquidus points of Allibert *et al.* [69All].

Chakrabarti and Laughlin [82Cha] put forth convincing arguments that the temperature-invariant reaction in this system is eutectic rather than peritectic. Further corroboration has come from Verhoeven [82Ver], who observed microstructures characteristic of eutectic decomposition. It now seems obvious that the calculations were carried one step too far and that the equations, as given above, yield a close approximation to the thermodynamic equilibria in the pure binary Cu-Nb system. That the calculations were being carried one step too far should have been recognized at the time if the exponential temperature dependence of reaction rates had been taken into consideration. This temperature dependence implies that high-temperature data are much more likely to represent equilibria than low-temperature data. Therefore, among the Cu-Nb data, the Allibert liquidus points should have been preferred over the solidus data. As a rule of thumb, with other factors being of comparable weight, high-

temperature data should be considered more reliable than low-temperature data.

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References

- 69All: C. Allibert, J. Driole, and E. Bonnier, *C.R. Acad. Sci. (Paris)*, 268C, 1579-1581 (1969).
- 77Luk: H. L. Lukas, E. Th. Henig, and B. Zimmerman, *Calphad*, 1, 225-236 (1977).
- 78Kau: L. Kaufman, *Calphad*, 2, 117-146 (1978).
- 78Ver: J. D. Verhoeven and E. D. Gibson, *J. Mater. Sci.*, 13, 1576-1582 (1978).
- 81Ba: D. M. Bailey, G. R. Luecke, A. V. Hariharan, and J. F. Smith, *J. Less-Common Met.*, 78, 197-205 (1981).
- 82Cha: D. J. Chakrabarti and D. E. Laughlin, *Bull. Alloy Phase Diagrams*, 2(4), 455-460 (1982).
- 82Ver: J. D. Verhoeven, Iowa State University, private communication (1982).

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We invite your comments on this or any other topic.
 — Editor

Addenda

Recent Literature

In Vol. 4, No. 4, page 356, the alloy system cited as As-Pd-Ti 83-12-1617 should be As-Pd-Tl, and the journal title should be "Crystal Structure of $\text{Pd}_{0.4}\text{Tl}_{0.1}\text{As}_{0.5}$ (m)."

The Fe-Ir (Iron-Iridium) System

In Vol. 5, No. 1, p 51, Fig. 4 is missing the least-squares plotted line. The corrected figure is shown on the right.

Plot of Logarithm of the Fe Activity Coefficients Divided by the Square of the Atomic Fraction of Ir vs Composition for the γ Phase at 1200°C

The activity data of [68Sch] were used to plot the points. The line represents the least-squares fit to a two-term, Redlich-Kister excess free energy equation. L. J. Swartzendruber, 1984.