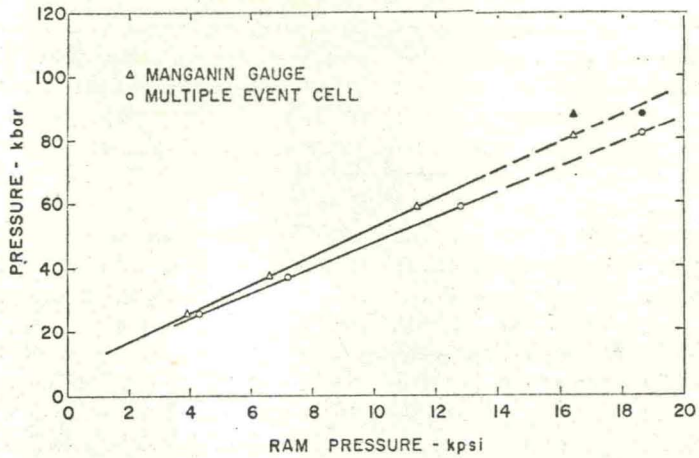

FIG. 6. True pressure vs. applied ram pressure calibration curves showing the upper Bi transition at 82 kbar. The long accepted 88-kbar value is indicated by the dark symbols.

is of no consequency. The upper Bi was observed at a ram pressure of 18,600 psi. Again extrapolating the calibration curve linearly beyond 60 kbar yields a value of 82 kbar for this transition. The "88-kbar" value is indicated by the closed circle in the figure.

We believe these results show that the long accepted 88-kbar value for the upper Bi transition is too high. The obtained value of 81–82 kbar is probably an upper limit. The final value will have to await further determinations, preferably by other techniques.*

It was shown earlier[8] that the manganin gauge can be used to obtain quantitative estimates of unknown volume changes associated with phase transitions. The method assumes that the decrease in the resistance of the gauge at the transition is proportional to the decrease in the vol. of the core. Thus, from the gauge response shown in Fig. 4 and from the known volume changes associated with the Bi I–II–III transitions, namely 10·3%,† the sudden vol. change for the upper Bi transition can be obtained. From Fig. 4 the ratios of the resistance drops are Bi I–II–III/upper Bi = 7/1. This corresponds to a vol. change of 1·47% at the upper transition. BRIDGMAN[2] reported a value of (1·5 ± 0·4)%.

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* After the completion of this work, it was brought to our attention that W. STARK and G. JURA (ASME pubication 64-WA/PT-28, December 1964) re-examined this transition using the Bridgman-anvil apparatus. Their value is 81 ± 4 kbar.

† The vol. at the start of the Bi_{I-II} transition is taken as the reference vol. in this case.