be pointed out that no cor-
d to the present data other
nductance of the leads from
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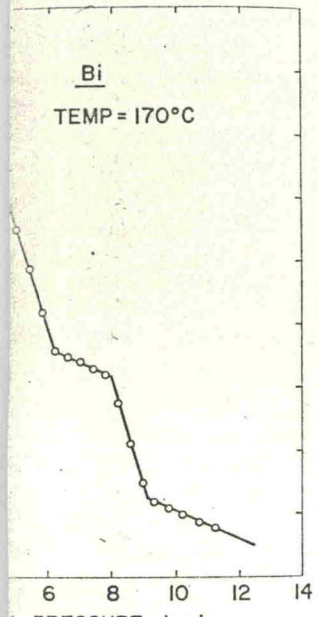

oil wound on a threaded Bi core
sure at 170°C. Lead inductance
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he inductive coil technique,
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ion
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oint is the upper Bi transi-
be at 88 kbar. On the basis

of an extrapolation from 65 kbar, KLEMENT *et al.*[4] have suggested that the transition probably occurs more nearly around 80 kbar. It was earlier suggested[8] that the manganin gauge with integral calibrants can be used to obtain a fairly accurate value for this transition. An experiment was designed to do this. The gauge consisted of 0·012 mm dia. manganin wire wound on a threaded 0·035 cm thick silver chloride sleeve enclosing a Bi–Tl–Ba core. The core consisted of concentric cylindrical sleeves of Bi and Tl with a Ba inner core. The over-all gauge dimensions were 0·41 cm dia. × 0·71 cm long. A multiple event resistance cell was also used in the experiment. Both sensors were monitored simultaneously.

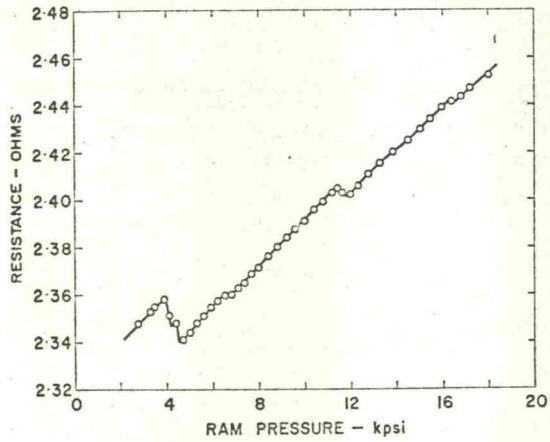

FIG. 4. Response of manganin gauge used in re-examining the pressure value of the upper Bi transition.

The response of the manganin gauge is shown in Fig. 4.* Figure 5 shows the derived calibration curve. Up to the Ba transition, the slopes of the various straight line segments of the curve are about equal. It is reasonable to expect that the same will hold true between the Ba and upper Bi points. The value of the resistance at the upper Bi transition is 2·4420 Ω. Extrapolating the calibration in Fig. 5 linearly as shown by the dashed line gives for this value of the resistance a transition pressure of 81–82 kbar. For the transition to be at 88 kbar, the slope of the curve will have to change drastically (dotted line), and, on the basis of accumulated experimental experience, this is unlikely.

This value for the transition pressure is confirmed in another way. We have previously shown[7] that for our apparatus, using standard size (7·30 cm on edge) prophyllite sample containers with preformed gaskets, the points for the Bi_{I-II}, Tl, and Ba transitions fall on a straight line on a plot of true pressure vs. applied ram pressure. Figure 6 shows results from the present experiment. The open triangles represent the points from the manganin gauge. The linearity of the calibration up to 60 kbar is clearly exhibited. Extrapolating this response beyond 60 kbar yields a value of 81 kbar for the upper Bi transition which occurred at an applied ram pressure of 16,400 psi. For the transition to be at a higher pressure than this would indicate an improvement in pressure generating efficiency, whereas generally the contrary is true. The "88-kbar" value is indicated in Fig. 6 by the closed triangle.

Figure 6 also shows the results from the resistance cell (open circles). The transitions in the calibrants were observed at different applied pressures than in the manganin gauge,† but this

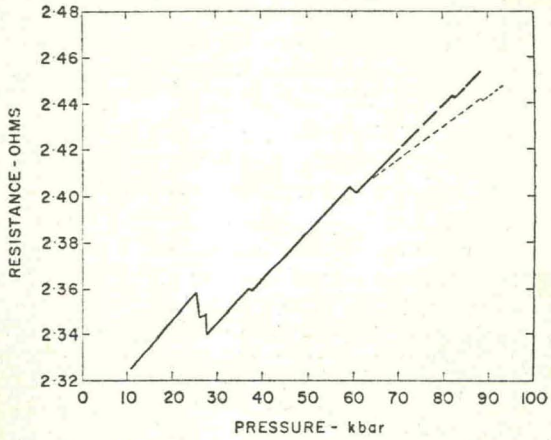

FIG. 5. Resistance vs. pressure curve obtained from the data in Fig. 4 and showing the upper Bi transition at 81–82 kbar.

* There was some evidence of the silver chloride transition at ~ 14,500 psi ram pressure (71–72 kbar true pressure), but the response was not sharp enough because of the small amount of silver chloride used.

† Reference 7 discusses the pressure homogeneity in the cubic apparatus used. The different applied pressures are in agreement with the mapped pressure profiles within the prophyllite container.