heat is calculated to be 49·0 cal./gm., which is in good agreement with the experimentally determined value of 47·2 cal./gm. To make doubly certain of the existence of melting above 300° C. at 40 kb., a special run was made in which a pure sample was compressed to 40 kb. at room temperature, and then heated. A thermal rest was encountered at 380° C., exactly as in the run on a sample of complicated pressure-temperature history.

Below 335° C., application of pressure transforms indium antimonide to another solid phase. We designate this new high-pressure form indium antimonide II, the normal form indium antimonide I. The solid–solid boundary was located by using the volumetric method briefly mentioned earlier. This boundary intersects the melting curve at 335° C. and 19·4 kb. The solid–solid transition has a large change in volume associated with it, and an estimate from measured displacement in transition gives $\Delta V/V \approx 20$ per cent, which is probably a minimum. It was found that a rise in temperature of 150° produced a great increase in the sharpness of the transition as recorded volumetrically. This is almost certainly due to higher transition velocity at higher temperature. The transition was so sluggish at room temperature that the pressure of transition could not be determined with nearly the precision at 80° C. This effect probably accounts for the very high-pressure values for drop in resistivity obtained by Gebbie *et al.* at 150° K.

It is well known that the intermetallic compounds formed among group III and V elements have properties resembling the corresponding members of the group IV elements. Indium and antimony occupy positions in the III and V group, sandwiching tin, which is the corresponding member of the fourth group IV. We may therefore expect indium antimonide to exhibit properties analogous to tin. Tin has two forms, grey tin and white tin, designated respectively α and β. White tin transforms to grey tin below 13° C. The latter has diamond structure and is a semiconductor while the former has a body-centred tetragonal lattice exhibiting metallic properties. The change-over from grey to white tin is accompanied by a large reduction in volume, amounting to 27 per cent. The transition in indium antimonide is strongly reminiscent of transformation from grey to white tin both in regard to the change from a state of semiconduction to metallic conduction and the large reduction in volume accompanying it. We believe from these considerations that the transformation which takes place in indium antimonide at high pressure is similar to the grey-white tin transition: indium antimonide I having zinc-blende structure corresponding to grey tin transforms to indium antimonide II having the structure of white tin.

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