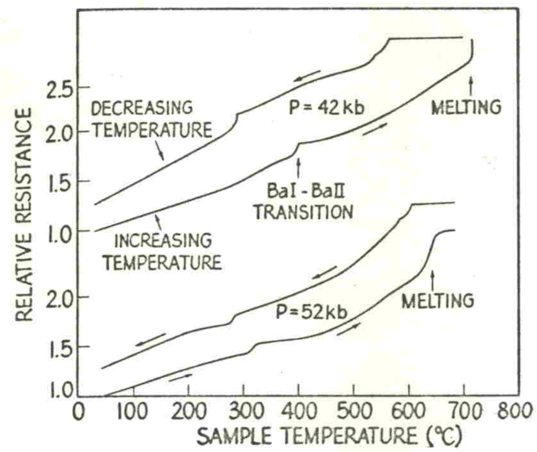

Fig. 2. Resistance vs temperature curves for the various phases of barium.

lting curves observed at low pressures in the present work and those obtained at higher pressures[6] lend support to the tentative conclusion that the 140-kb transition at 25°C is indicative of melting. Positive identification of this phase as liquid, however, can be made only after high pressure x-ray measurements are carried out. If Ba is liquid above 140 kb at low temperatures, the technological implications would be significant since true hydrostatic measurements would be possible in the very high pressure range at reasonable temperatures.

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IRECT OBSERVATION OF DISAPPEARANCE AND COLLAPSE OF STACKING-FAULT TETRAHEDRA IN GOLD FOILS DURING ION BOMBARDMENT IN THE ELECTRON MICROSCOPE

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(low to room temperature; E)

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lcox and Hirsch[1] found that defects in the form stacking-fault tetrahedra were produced during quenching and subsequent aging of gold. Cotterill and others[2,3] bombarded quenched and aged Au at 20°C with 1.0- and 3.5-MeV alpha particles upon examining their foils in the electron microscope after the bombardment found that the tetrahedra collapsed. They suggested that the interstitials rated during irradiation migrate to the tetrahedra cause them to collapse. To obtain further mation on the mechanism of collapse of the hedra and, hopefully, on the temperature of tion of interstitial atoms, we have been bom Au foils in the electron microscope with eV O^- ions emanating from coated emission filaments. In order to study this ion damage at low temperatures as well as at room temperature, a liquid helium cooled finger was constructed for the microscope. A sample temperature below 30°K (but above 15°K) could be attained, as determined by condensing xenon, krypton, argon, or nitrogen onto the cold sample during observation. Full details of the cold finger including the determination of specimen temperatures and the results obtained during ion bombardment of annealed copper below 30°K are given elsewhere.[4,5]

Stacking-fault tetrahedra were produced in 99.999% pure Au foil by quenching from 950°C into brine at 0°C and then aging for one hour at 100°C. When a normal emission filament was used in the electron