

test this, the second, to determine the value of V^* . Knowledge of V^* should help elucidate the nature of the rate controlling step in ordering.

EXPERIMENTS

The high pressure technique for the proposed experiment must satisfy a number of requirements. Studies of the effect of pressure on the atomic mobility in fcc metals indicate that pressures of the order of 20 kbar will be required to produce measurable effects on the order-disorder transformation. The pressure must be very nearly a true hydrostatic pressure since the transformation is known to be sensitive to plastic strain. Since electrical resistivity changes are to be used to follow changes in the state of order, four electrical leads as well as four thermocouple leads must be introduced into the sample space. Finally, temperatures up to about 450°C must be attained while the sample is under pressure and it must be possible to both hold the temperature constant for long periods of time and to change it rapidly from one value to another.

Apparatus. It was found that these requirements could be met economically with Bridgman anvils in conjunction with a multi-layered gasket. The anvil and gasket design used is shown in Fig. 2. For the temperature and pressure range of these experiments it is not necessary to use tungsten carbide anvil inserts; "Hypercut" high speed steel has the requisite hardness and hot strength.