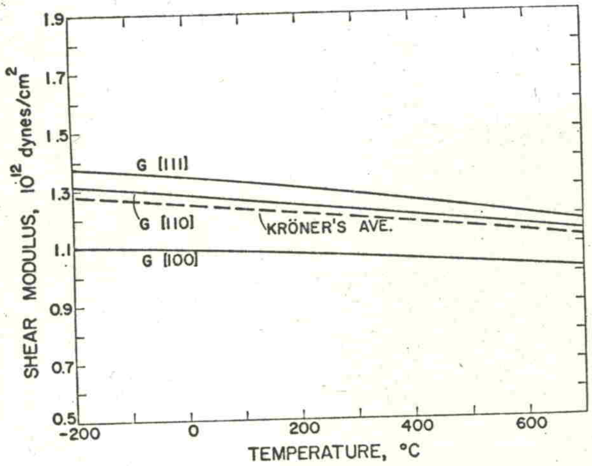

FIG. 2. The variations with temperature of the shear modulus of three single crystals of molybdenum, and the shear modulus calculated for isotropic molybdenum from the single-crystal values.

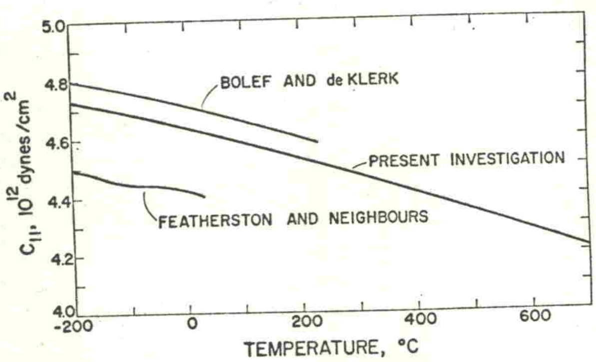

FIG. 3. The elastic stiffness coefficient C_{11} of molybdenum as a function of temperature.

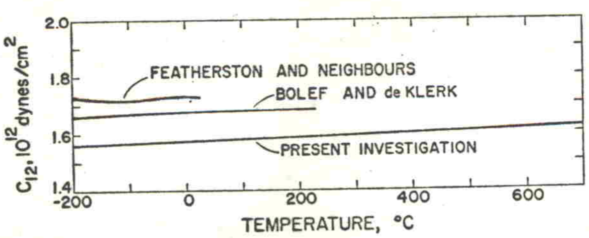

FIG. 4. The elastic stiffness coefficient C_{12} of molybdenum as a function of temperature.

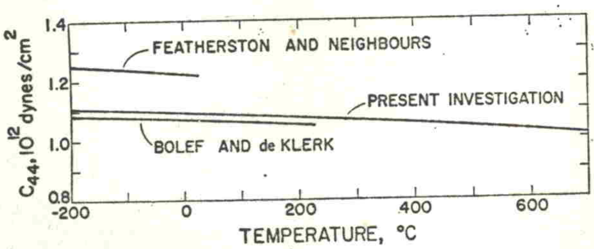

FIG. 5. The elastic stiffness coefficient C_{44} of molybdenum as a function of temperature.

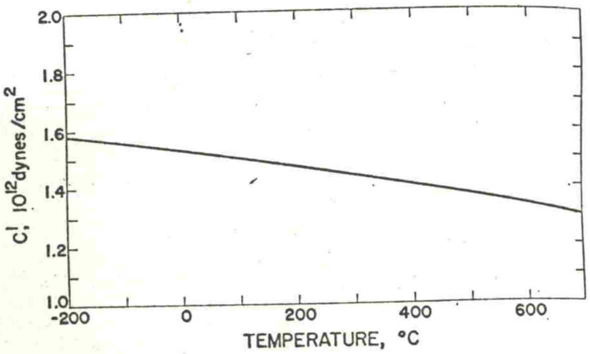

FIG. 6. The shear coefficient C' as a function of temperature.

[100] direction. At each temperature, the [100] direction showed the largest Young's modulus and smallest shear modulus while the [111] direction had the largest shear modulus and smallest Young's modulus, resulting in an anisotropy factor less than unity.

The elastic stiffness coefficients calculated from the experimental data are shown plotted against temperature in Figs. 3, 4, and 5. Coefficients C_{11} and C_{44} again showed a decrease with increasing temperature, the decrease amounting to about 11% for C_{11} and 8% for C_{44}. C_{12}, on the other hand, actually showed a small increase. In Table III the values of the elastic stiffness coefficients of Mo and the estimated standard deviations are shown at 100°C intervals.

Since the elastic stiffness coefficient C_{12} has no simple physical interpretation, it is desirable to also report the data in terms of combinations of coefficients that have a physical significance. The bulk modulus, K, and the shear coefficient, C', which were defined earlier are such coefficients. Curves showing the variation of these two coefficients with temperature are shown in Figs. 6 and 7. The bulk modulus, which measures the resistance of the material to hydrostatic compression decreases about 5% over the 900°C temperature range. The shear coefficient C' decreased 18% over the same temperature range while C_{44}, the other shear coefficient, decreased only 8%, so that their ratio, the anistropy factor (Fig. 8), is increasing towards unity as temperature increases. This indicates a tendency

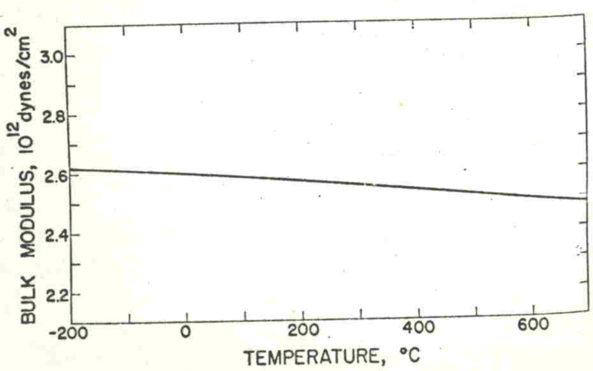

FIG. 7. The bulk modulus of molybdenum as a function of temperature.