kOe correspond to the extremal sections of the α parts of the Fermi surface, transverse to the field H. The value of the period $\Delta_\alpha(H^{-1}) = 5.33 \cdot 10^{-7}$ Oe^{-1} coincides with the value given earlier [4, 5] and remains constant to within ± 3% up to a pressure of 6 kbars.

The giant quantum oscillations corresponding to the extremal area of the γ necks of the hole surface, transverse to the field H, give a period of $\Delta_\gamma(H^{-1}) = 3.71 \cdot 10^{-5}$ Oe^{-1} at zero pressure, this remaining almost constant (to within ± 3%) up to a pressure of 2 kbars. For a pressure of the order of 2.5 kbars, the strict periodicity of the giant quantum oscillations with respect to the reciprocal field was disrupted, and this impeded calculation of the period. An estimate of this period indicates a reduction of approximately 15% in the cross-sectional area. For a pressure of about 3 kbars the giant quantum oscillations vanish; this may be interpreted as the disruption of the γ necks connecting the α parts of the hole Fermi surface, i.e., as a higher-order phase transformation, such as that considered earlier [6].

As indicated by S. Golin [7], the presence of hole necks on the Fermi surface of arsenic is as-

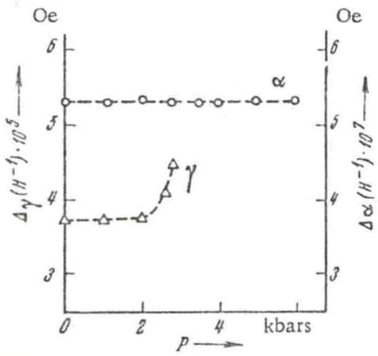

Fig. 3. Oscillation periods of the sound absorption coefficient in relation to the pressure.

sociated with the degeneracy of the band structure. This degeneracy may be removed by spin-orbital interaction. While the energy of the spin-orbital splitting $\lambda \ll 2(E - E_F)$, where E is the degeneracy energy and E_F is the Fermi energy, the hole Fermi surface retains the form illustrated in Fig. 1. However, when the spin-orbital splitting becomes sufficient to satisfy the condition $\lambda < 2(E_0 - E_F)$, the hole γ necks vanish, as indeed we observed experimentally by virtue of the vanishing of the giant quantum oscillations at pressures of over 3 kbars.

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