Fig. 5 exhibits the experimental dependence of transition temperature change on pressure in a $Mn_2Ge_{0.12}Sb_{0.88}$ sample (curve 1), plotted by us on the basis of curves analogous those given in Fig. 4. It is possible to show that the $T_k(P)$ dependence must be linear only at low pressures, so deviations of the experimental dependence 1 from slope 2 are readily explained. In Fig. 4 the calculated dependence is shown by the dotted line 3; its slope essentially differs from the experimental value $(\partial T_k/\partial P) = 2.3$ deg/katm at $T = 324$ °K. A similar discrepancy was also observed in the $Mn_{2-x}Cr_xSb$ system [9, 10]. It is appropriate to assume that these deviations are caused by the fact that in Kittel's theory only the change along one crystallographic axis with transition is considered, while in reality, as is shown by X-ray investigations of the $Mn_{2-x}Cr_xSb$ system [9], AF–FM transitions are accompanied not only with an increase of the parameter C, but with a decrease of the parameter a. Thus the crystal cell volume change at transition of the AF–FM type will be little less than it was assumed in Kittel's theory. This must result in a decrease of the coefficient $(\partial T_k/\partial P)$. We have no values for the $Mn_2Ge_ySb_{1-y}$ system, but if for estimates one uses a value obtained for the $Mn_{2-x}Cr_xSb$ system, the calculated value of $(\partial T_k/\partial P)$ would be 2.47 deg/katm. This value is close to the experimental one of 2.3 deg/katm, obtained for $Mn_2Ge_{0.12}Sb_{0.88}$.

Thus the magnetic transition in the $Mn_2Ge_ySb_{1-y}$ system under high pressure at room temperature cannot be described by Kittel's theory without corrections due to the change of unit cell parameters along different axes.

References

[1] A. A. GALKIN, E. A. ZAVADSKII, and E. M. MOROZOV, Fiz. tverd. Tela **11**, 106 (1969).
[2] A. A. GALKIN, E. A. ZAVADSKII, and E. M. MOROZOV, Zh. eksper. teor. Fiz., Pisma **8**, 646 (1968).
[3] Trudy Institutov Goskomiteta Standartov, Mer i Izmerit. Priborov SSSR **75**, 135 (1964).
[4] T. J. SWOBODA, W. H. CLOUD, T. A. BITHER, H. S. SADLER, and M. S. JARRETT, Phys. Rev. Letters **4**, 509 (1960).
[5] H. S. JARRETT, P. E. BIERSTEDT, F. J. DARNELL, and M. SPARKS, J. appl. Phys. Suppl. **32**, 57 (1961).
[6] C. KITTEL, Phys. Rev. **120**, 335 (1960).
[7] J. P. MEYER and T. TAGLANG, J. Phys. Radium **14**, 82 (1953).
[8] T. A. BITHER, P. M. WALTER, W. H. CLOUD, T. J. SWOBODA, and P. E. BIERSTEDT, J. appl. Phys. Suppl. **33**, 1346 (1962).
[9] E. D. DARNELL, W. H. CLOUD, and H. S. JARRETT, Phys. Rev. **130**, 647 (1963).
[10] W. A. DOERNER and R. B. FLIPPEN, Phys. Rev. **137**, A926 (1965).

(Received November 21, 1969)