Table 1

Composition	Transition	T_{k0} (°K)	σ_s (e.m.u./g)	$\partial H_k/\partial T$ (Oe/deg)	ΔS (erg/g deg)	ΔQ (cal/g)
$Mn_2Ge_{0.12}Sb_{0.88}$	AF–SP	285	16.4	3.57×10^3	5.84×10^4	0.4
	AF–FM	324	23.2	3.96×10^3	$9.2\ \times10^4$	0.71
$Mn_2Ge_{0.16}Sb_{0.84}$	AF–SP	327	10.8	3.23×10^3	$3.5\ \times10^4$	0.27
	AF–FM	372	13.1	4.41×10^3	5.78×10^4	0.513
$Mn_2Ge_{0.20}Sb_{0.80}$	AF–FM	370	7.1	4.28×10^3	3.04×10^4	0.269

where T_{k0} is the transition temperature without magnetic field, $\Delta\sigma$ the sublattice magnetization change, ΔS the change of entropy of the spin system at transition.

From the temperature dependence of magnetization, $\sigma(T)$, measured in strong magnetic field, it is possible to define $\Delta\sigma$, and from the experimental dependence $T_k(H_k)$ it is easy to find $(\partial H_k/\partial T_k)$. Then on the basis of (6) it is possible to calculate the entropy change and transition heat. We have performed such calculations for all investigated samples. Table 1 gives the calculated results for three compositions in which all magnetic transformations peculiar to the $Mn_2Ge_ySb_{1-y}$ system are observed. Using the results given in Table 1 and the X-ray diffraction investigations of the $Mn_2Ge_ySb_{1-y}$ system [8], we have for $Mn_2Ge_{0.12}Sb_{0.88}$

$$\frac{M^2}{\Delta C} = 3.8\times10^5\,\mathrm{G^2/Å}\,.$$

Then using $\gamma = 2\times10^{12}\ \mathrm{cm^{-1}\,g\,s^2}$ [5] it is possible on the basis of (4) to calculate

$$\frac{\partial\alpha}{\partial C} = 5.9\times10^4\ \mathrm{erg/G^2\,Å}\,.$$

Now on the basis of (5) we can define a thermal expansion coefficient of the lattice, $(\partial C_T/\partial T) = 7.7\times10^{-4}$ Å/deg, and calculate using (3) the coefficient $(\partial T_k/\partial P)$. For $Mn_2Ge_{0.12}Sb_{0.88}$ we obtain

$$\frac{\partial T_k}{\partial P} = 4.25\ \mathrm{deg/katm}\,.$$

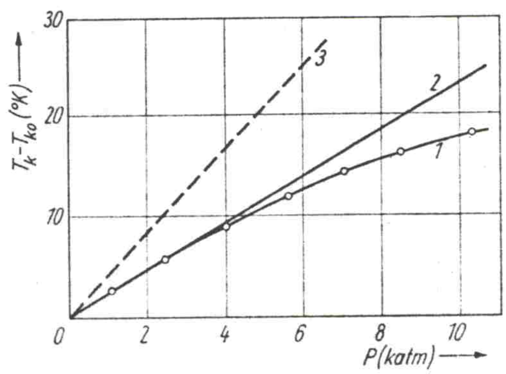

Fig. 5. Comparison of experimental and calculated dependences of pressure influence on the shift of the transition temperature in $Mn_2Ge_{0.12}Sb_{0.88}$. Curve 1 is an experimental one, curve 2 is the tangent to the experimental dependence, and curve 3 is the calculated dependence