the system state. Applying these relations, it is possible, on the basis of a study of magnetic transformations in the system in the presence of strong magnetic field, to calculate the temperature coefficient of $(\partial T_k/\partial P)$ and to compare the calculated value with the experimental one. It would directly allow to judge about the application of Kittel's theory to the description of magnetic transformation in the $Mn_2Ge_ySb_{1-y}$ system under pressure. Such a comparison is given in our paper.

2. Measurements and Samples

Investigations were carried out on polycrystalline samples of the $Mn_2Ge_ySb_{1-y}$ system with composition $y = 0.04$, 0.08, 0.12, 0.16, and 0.20. Magnetic measurements were performed in pulse magnetic fields up to 300 kOe in the temperature range from 77 to 450 °K. The measurement technique and sample preparation were the same as in paper [1]. The shift of transition temperature with pressure was studied by the electrical resistance anomaly at the phase transition point. The samples were placed in a high-pressure bomb where measurements were performed at pressures up to 15 katm and in the temperature range 77 to 450 °K. Pressure was measured with a manganin manometer using methods described in [3].

3. Results of Measurements

From the numerous compositions of the system studied we use only data obtained on samples with $y = 0.08$, 0.12, 0.16, and 0.20 which we consider to be of interest.

Fig. 1 shows the temperature dependence of magnetization for samples of $Mn_2Ge_{0.16}Sb_{0.84}$ composition obtained in fields of 53, 106, and 212 kOe. At low temperatures the magnetization is very low and practically does not depend on temperature, which is characteristic of the antiferromagnetic state.

With temperature increase a transition is observed first into the spiral state and then into the ferrimagnetic one. Increase in the magnetic field strength shifts both transitions to the low-temperature region. The magnetization values 17.3 e.m.u./g at 340 °K, 16.1 e.m.u./g at 360 °K, and 14.5 e.m.u./g at 365 °K

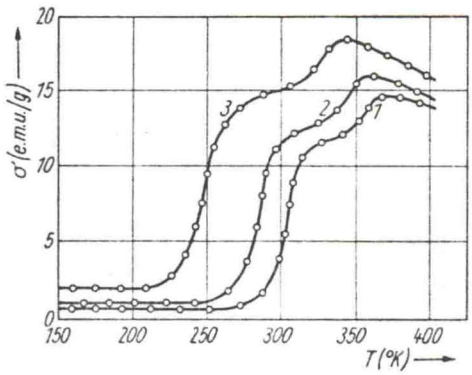

Fig. 1. Temperature dependence of the magnetization of $Mn_2Ge_{0.16}Sb_{0.84}$ samples in magnetic fields of different strength. (1) $H = 53$ kOe, (2) $H = 106$ kOe, and (3) $H = 212$ kOe

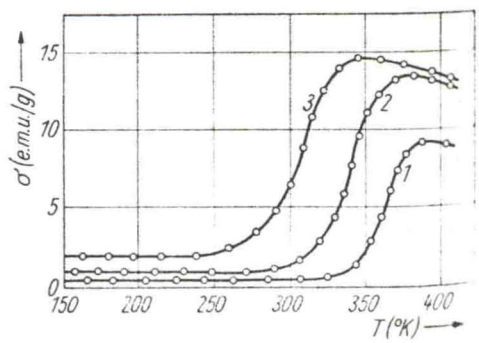

Fig. 2. Temperature dependence of magnetizations in $Mn_2Ge_{0.20}Sb_{0.80}$ samples in magnetic fields of different strength. (1) $H = 27$ kOe, (2) $H = 100$ kOe, and (3) $H = 240$ kOe