the sample surface on the wall mobility is shown experimentally. The influence of the potential barriers due to individual dislocations on the values of the dynamical domain wall parameters measured is investigated. It is shown that the experimentally revealed nonlinear dependence of domain wall mobility on the magnitude of magnetic field may not only be of a gyroscopic nature but of a dissipative nature as well and may reflect the change in the mechanism of energy transfer from the moving wall to a magnon subsystem with growth of magnetic field.
For the first time, results are presented of the direct experimental investigation of dynamics of Bloch lines. The magneto-optical method for measuring a single Bloch line displacement along the domain wall separating domains with antiparallel orientation of the magnetization lying in the (110) or (112) platelet plane is worked out.
The resonance of Bloch lines displacements in sinusoidal magnetic field has been revealed, the free oscillations of a Bloch line are studied. The effective mass and the mobility of a Bloch line are measured. It is shown that free and forced Bloch line oscillations are nonlinear due to the inhomogeneity of the crystal structure of the ferrimagnet.
The phenomenon of the Bloch lines generation under the action of the sinusoidal magnetic field, at certain values of its amplitude and frequency, has been found. It turned out that an important role in the generation and in the annihilation of Bloch lines is played by the surface and volume crystal imperfections.

05.2-07 SPIN-REORIENTATIONAL PHASE TRANSITION IN THE DISLOCATION MICROSTRESS FIELD. By L.M.Dedukh, M.V.Indenbom, V.I.Nikitenko and V.K.Vlasko-Vlasov, Institute of Solid State Physics of the Academy of Sciences of the USSR, Chernogolovka, USSR.

As it was shown by recent investigations the magnetization of magnetics posessing several magnetic sublattices can be provided not only by usual mechanisms of domain wall displacement and of magnetic momenta rotation but by spin-reorientational phase transition (SRPT) also. Experiments revealed that it is impossible to explain the processes of the formation of various collinear and canted phases in real ferrimagnetic crystals without taking into account the lattice defects. However until now there were no works in which the influence of the defects on the SRPT had been researched. In present communication the results are reported of the first experimental study of the features of magnetic field-induced SRPT which are connected with individual dislocations.It is shown that dislocations cause the shift of the phase transition lines and the expansion of the temperature intervals of the existence of appropriate phases. Moreover, they produce some radical changes in phase transition character.
The investigation was carried out on gadolinium iron garnet (GIG) plates at temperatures (T) near the compensation point (T_c). Dislocations in GIG plates were revealed in polarized light by virtue of piezobirefringence. Magnetic phases were identified by Faraday and Cotton-Mouton effects.
As a result of the study, it was established that dislocations are the centers of nucleation of incollinear phase domains during the transition into canted state and that collinear phases arise at them when the reverse transition goes. The initial form of incollinear phase domains near a dislocation corresponds to the character of the local magnetic anisotropy due to dislocation microstress field. Moreover, the rise of domains of magnetic phase different from those peculiar for the chosen geometry of SRPT in perfect crystal is revealed at dislocations.
The interaction of dislocations with domain walls of new type - boundaries between canted and collinear phases is studied. It is found that these domain walls widen noticeably in the dislocation elastic field turning into new phase domains. Their pinning at the defect and following jumps influence considerably the kinetics of SRPT proceeding. From observations of the rise and growth of domains of different magnetic phases, the SRPT diagrams for crystal regions deformed by the dislocation and for regions remote from it are built. The dislocation shifts phase transition lines by several degrees in temperature resulting in both the earlier beginning of SRPT near the defect when T approaches T_c and in its late finishing at the dislocation also when T removes from T_c. The analysis of results received and the comparison of measured shift of phase transition lines with the estimations made in the frames of current theories indicates the principal role of local magnetic anisotropy induced by microstresses in the formation of SRPT peculiarities near a dislocation.

05.2-08 HYDROTHERMAL SYNTHESIS, CRYSTAL STRUCTURE AND MAGNETIC PROPERTIES OF $Cs_2FeF_5 \cdot H_2O$. By N.V.Belov, N.I.Golovastikov, A.N.Ivashenko, B.Ya.Kotjuzhanskii, O.K.Melnikov, V.N. Phylippov. Institute of Crystallography, Academy of Sciences, 117333, Moscow, USSR

Hydrothermal crystallization in the system $CsF-FeF_3-H_2O$ was investigated. The experiments were performed in steel autoclaves in the temperature range 470-580 K at pressures about 1000 at. It was found that the phase $Cs_2FeF_5 \cdot H_2O$ only exists at concentrations 30 mass% CsF or higher in the temperature range investigated. The crystals of this phase are colorless or weak green and have the dimensions to 6x6x8 mm. The structure of grown crystals (D_{2h}^{17} = Cmcm) and the unit cell dimensions (a = 10.361, b = 8.266, c = 8.401 $\pm$ 0.003 Å) were determined by X-rays . The static and resonance measurements performed at T = 1.2 - 300 K have shown that the investigated crystal transforms at T_N = 2.4 $\pm$ 0.1 K from paramagnetic to antiferromagnetic phase with magnetic anisotropy of "easy axis" type. The susceptibility was determined in antiferromagnetic phase, $X_1(1.8\ K) = 0.32\ mole^{-1}$ $\pm$10%.