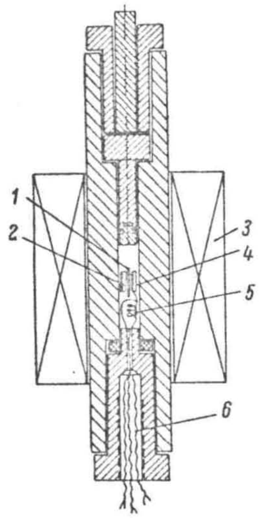

Fig. 1. Diagram of arrangement of high-pressure cell and measuring coils relative to solenoid. 1) Sample; 2) measuring coil; 3) pulse solenoid; 4) compensating coil; 5) manganin manometer; 6) electrical cable.

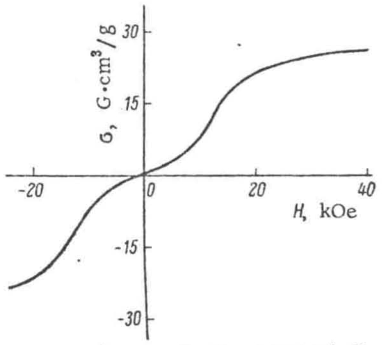

Fig. 2. Oscillogram of magnetization curve of alloy $MnAu_2$. T = 297°K, P = 1 atm.

The magnetization of the sample was measured by the induction method, for which two coaxial coils, connected differentially, were mounted in the cell. Figure 1 shows the arrangement of the high-pressure cell and measuring coils relative to the solenoid. The measuring coil 2, in which the sample 1 was placed, had 1000 turns of copper wire 0.03 mm in diameter, the average diameter of the turns being 1.2 mm; the compensating coil 4 had 120 turns with an average turn diameter 4.5 mm. Full compensation was attained by varying the number of turns of the inner measuring coil. Owing to the coaxial arrangement of the coils, shifting them along the solenoid axis had practically no effect on the compensation; hence taking the cell out of the solenoid (in order to raise the pressure in the cell) did not upset the compensation in the series of measuring coils. It is evident from Fig. 1 that the cylindrical hole 6, through which the leads enter the cell (high-pressure electrical cable), has a much larger diameter on the low-pressure side. We used this simple method in order to increase the area of adhesion of the filler (epoxy resin) to the walls of the electrical cable, which decreased the length of the seal and reduced the quality requirements of the epoxy resin used. The pressure in the cell was measured by a manganin manometer 5, Fig. 1.

Figure 2 shows an oscillogram of the magnetization curve of a sample placed in the cell at 1 atm pressure. Magnetic measurements were made on a sample investigated in [6]. It had the form of a cylinder 0.8 mm in diameter and 6.84 mm long. The magnetization σ was measured against the field H at room temperature. The threshold magnetic field H_c, corresponding to maximum susceptibility, was determined from the position of the peaks in the oscillogram of the curve of $\partial\sigma(H)/\partial t$.

As a standard for determining the absolute value of magnetization, we used a nickel sample of the same dimensions.

2. RESULTS OF MEASUREMENTS

Magnetization curves of the alloy $MnAu_2$ in magnetic fields having intensities up to 80 kOe at various pressures are given in Fig. 3. These curves show that the threshold magnetic field H_c decreases with increasing hydrostatic pressure, which agrees with the results of other authors. The threshold magnetic field is plotted against pressure in Fig. 4, which shows that H_c decreases nonlinearly with increasing pressure. Our $MnAu_2$ sample at 14 kbars is close to transition to the ferromagnetic state without any external field, since the threshold field is only 1.5 kOe in this case. It is also evident from Fig. 3 that increasing the pressure has no measurable effect on the saturation magnetization of the alloy. Moreover, the susceptibility in the ferromagnetic state in a field exceeding the threshold value decreases appreciably with increasing pressure.

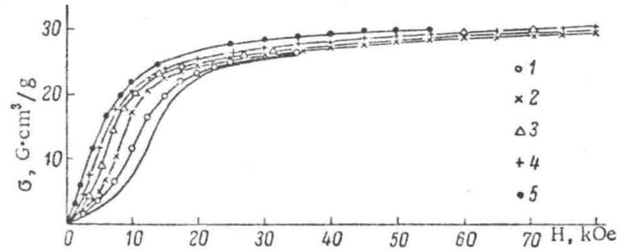

Fig. 3. Magnetization curves of alloy $MnAu_2$ at various pressures. The solid curve denotes 1 atm. P, kbars: 1) 4.76 kbars; 2) 6.43; 3) 10.15; 4) 11.76; 5) 14.1. T = 297°K.