In this thesis, we describe the work with a new pressure cell, its implementation in Joint Laboratory for Magnetic Studies, together with testing measurements necessary for ensuring good environmental conditions control and trouble-free operation. We have chosen a single crystal of the CePtSn compound to be the first representative measurement. We measured electrical resistivity along crystallographic b-axis in conditions: T = 2-300 K, p = 0-2.5 GPa and magnetic field B = 0-14 T applied along b-axis. We observed only minimal pressure influence on temperatures of magnetic phase transitions, however interesting and rather unusual behavior in magnetic fields was revealed. Previous works reported two field-induced transitions at low temperatures and ambient pressure, with values of the critical fields BcLF ~ 4 T and BcHF ~ 11.5 T, accompanied with large magnetoresistence step of -30% and +10%, respectively. With application of pressure, we observed shift of the critical field of low-field transition BcLF to the higher fields, whereas the value of critical field of high-field transition BcHF was unaffected with applied pressure. At a p ~ 1.5 GPa the two transitions merged and only one step was observed. With pressure further increasing above 1.5 GPa, situation with two transitions, similar to the lower pressure region, was restored and BcLF decreased with increasing pressure, reaching the value ~ 5 T at pressure ~ 2.5 GPa. Results were compared to the previous works.