We have studied two different systems of compounds, YPd_2Al_3 and $Ce_nT_mIn_{3n+2m}$. Polycrystalline YPd_2Al_3, a new member of the $REPd_2Al_3$ system, was prepared by arc melting. The X-ray diffraction confirmed that YPd_2Al_3 crystallizes in the hexagonal $PrNi_2Al_3$-type structure as the other $REPd_2Al_3$ compounds. Magnetization, AC susceptibility, specific heat and resistivity measurements revealed superconductivity below $T_s \approx 2.2$ K. The second part of the work was focused on studies of Ce_2PdIn_8 and Pd-doped Ce_nRhIn_{3n+2}. Single crystals of $Ce_2Rh_{1-x}Pd_xIn_8$ with $x = 0$, 0.10, 0.15, 0.30, 0.45, 0.85, 1 and $CeRh_{1-x}Pd_xIn_5$ with $x = 0$, 0.1, 0.25 were prepared by solution growth method. The quality of crystals was confirmed by microprobe analysis and X-ray diffraction. The effect of Pd doping on magnetism of $Ce_nRh_{1-x}Pd_xIn_{3n+2}$ was studied by specific heat, magnetization and resistivity measurements. The Pd doping gradually suppresses the Néel temperature in both systems, however the effect is stronger in $Ce_2Rh_{1-x}Pd_xIn_8$. Temperature dependence of resistivity of $CeRh_{0.75}Pd_{0.25}In_5$ was studied in pressure up to 2.2 GPa. Similar to $CeRhIn_5$, the antiferromagnetism is gradually suppressed by the applied pressure, while superconductivity is induced and coexists with antiferromagnetism.