We have studied two different systems; RE_2CoIn_8 (*RE* = Pr, Nd, Dy) and Ce_nTIn_{3n+2} (*T* = Pd, Pt; *n* = 2, 3). All compounds were prepared for the first time in the single crystalline form using the self-flux method. *X*-ray diffraction confirmed the tetragonal Ho_2CoGa_8 structure type for the RE_2CoIn_8 compounds and for the new phase Ce_2TIn_8. The novel phase Ce_3PtIn_{11} adopts the structure of the Ce_3PdIn_{11} compound, which represents a new structure type. Magnetic measurements revealed low anisotropy and the *c*-axis as the easy axis for all RE_2CoIn_8 compounds. Pr_2CoIn_8 is a paramagnet, while Nd_2CoIn_8 and Dy_2CoIn_8 order antiferromagnetically. Magnetization and specific heat measurements of Dy_2CoIn_8 revealed complex magnetic field-temperature phase diagram with various types of magnetic ordering. Specific heat measurements on multiphase Ce-Pd-In system revealed superconducting transition at T_c = 0.69 K arising from Ce_2PdIn_8 and another magnetic transition from Ce_3PdIn_{11} at ~ 1.7 K. Ce_3PdIn_{11} and Ce_3PtIn_{11} compounds reveal two, probably magnetic transitions at T_1 = 1.6 K, T_2 = 1.45 K and T_1 = 2.1 K and T_2 = 2.0 K, respectively. Specific heat data qualifies both materials as heavy fermion compounds with γ = 290 $mJ.mol^{-1}Ce\ K^{-2}$ and γ = 300 $mJ.mol^{-1}Ce\ K^{-2}$ respectively.