In a 2D world, most transitions towards ordered states of matter like crystals or magnets would not occur because of the increased role of fluctuations. However, non-conventional “topological” transitions can still occur, as understood by Kosterlitz and Thouless (2016 Nobel prize). In this talk I will present some important features of Flatland physics explored with cold atomic gases, and connect them with other prominent topological properties of matter, such as quantum-Hall type phenomena.