Experimental achievements in cooling and manipulating ultracold atoms introduced atomic physics into the world of many-body correlated systems – the domain of condensed matter physics. With optical lattices mimicking crystalline structures, and atoms substituting for electrons, such ultracold systems became a very universal playground for studying a variety of many-body effects. Precise control of many essential parameters and the possibility of a direct observation are the important advantages of atomic systems. In my talk I will concentrate on some aspects of ultracold atoms physics starting with exotic phases in optical lattices, discussing results of single shot images of quantum many-body systems and describing the recent discovery of liquid atomic droplets.